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Medical Aspects of Aging[1]

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AT THE moment the "Medical Aspects of Aging" are in somewhat of a muddle. If this seems unbelievable, ask any gerontologist what is meant by the terms "aging," "senescence," "senility," and "involution."

Aging, as presently maintained by the gerontologists, constitutes a rather vague condition or state representing a balance between evolution or growth and involution or atrophy. They go hand in hand, growth being in ascendency in the young and atrophy being in ascendency in the old. This is further elaborated on to include the involution or atrophy that occurs when certain structures like the thymus or ovary cease to function. They get old. Thus, we become more mixed up trying to understand and account for varying degrees or rates of evolution or involution of certain parts of a whole that is itself of one age.

Would it not be simpler to use those proven tenets of physiology and anatomy which have taught that structure depends on function? Thus, the varying degree of evolution or involution in organs would represent a varying degree of need and function and would not be related to time or age. This, at least, gets us out of the dilemma of having one part of the whole older or younger than the remainder.

Now among non-gerontologists, aging means many things to many people. We all have a tendency to interpret the concept in relation to our own age and previous experience. The tottering gait, the shaking hand, the white hair or bald pate, the shrunken shank, the piping voice, the store teeth, the thickening glasses, the forgetful mind, the peevishness, the narrowed mental horizons, and the lack of motive color the picture for most. Add to this the overtones representing all the symptoms of the degenerating diseases of man, such as high blood pressure, thickened arteries, and kidney disease, and we have a fair concept of the future that a larger and larger percentage of us must anticipate.

Both the initiated and the uninitiated run into difficulty when, out of the welter of the above characteristics, we try to separate the pathologic from the non-pathologic, the sick from the well. What constitutes so-called normal involution and atrophy, and when does the speed or degree of this process spell out the pathologic? This is not a simple problem but again, in already established fields of medicine, the signposts have been erected.

We now know that our old divisions of medicine were very arbitrary and that we see the pediatric diseases of measles, mumps, and poliomyelitis among the oldsters and high blood pressure, thickened arteries, arthritis, and cancer among the youngsters. We also see people of eighty chronologic years who are fifty physiologically and vice versa.

This complete breakdown of past philosophies leads us to pay serious heed to the results coming from recognized research laboratories. More and more it is indicated that the degenerative diseases of man result from the impact of environment on that prefabricated hereditary structure that is man. In the laboratory we see these diseases occurring in animals exposed to hunger, extremes of temperature, lack of oxygen, infections, loss of blood, or fear with little relationship to the age of the animal. In other laboratories, where the environment is regulated in the direction of protection for the individual, we have members living for an unbelievably long time. How the new aseptic environments which are being created in some centers will influence longevity is anybody's guess. It seems safe to say, however, that the potentiality for longevity will have been greatly increased.

Aging—The Result of Environment

If by now enough turbulence has been created to indicate that all preconceived ideas regarding aging are on unstable ground, we can proceed to theorize. Aging, the passage of time, and the accumulation of years, months, and days contribute very little to the picture portrayed above. To the gerontologist, involution represents more truly the altered structure that results from changes in need and function. The symptoms of illness appear as the logical sequence of exposure to the etiologic factors of disease whether the patient be twenty or sixty years of age. The stigmata of aging so indelibly a part of the vision of the

[1] Presented at the 39th Annual Meeting of The American Dietetic Association in Milwaukee, on October 11, 1956.

future for most people may well be the hallmark of distinction indicating man's successful conflict with his environment. Therefore, he continues living and enjoys life.

Time, the inexorable master of all the problems of gerontology up to the present, has been removed from his throne. Environment, the vacillator, has been installed in his stead. The way is now open to modify the future of each one of us and of those to come after. Our relation to the new king will be more hopeful because of his attributes, and our ability to influence him will ever improve as we increase in wisdom. The application of the principles of good nutrition, the modern rules of preventive medicine, and the theories of physical and mental exercise—all under the direction of moral and psychologic responsibility—will enable us to influence favorably the course and the future of an aging population.

Future Potentialities for the Aged

This problem was not exactly of our own choosing but was in part the result of our own doing. Medicine and the allied sciences have made it possible for more infants to survive those formerly fatal early years. After this, further protection was given them from the serious types of infection which previously decimated the ranks of early childhood. These refugees from the hazards of early life have lived to swell the numbers of the aged. Not too much has been accomplished to improve the longevity of those past sixty years of age. This has been due largely to the fact that most workers in the field regarded the involutionary process, the degenerative diseases, and the stigmata of aging as inevitable. This legion of the long-lived deserves better treatment from our hands.

Our next problem is to improve the medical and social status of this legion. The body is improved by maintaining its function to the fullest. The mind thrives best when interested and well motivated. Both have a critical dependence on good nutrition. Under these circumstances, the physical condition and mental level of even the already aged can be improved. The lessons learned here, if applied earlier and earlier to each succeeding generation, will surely bring to fruition the full potentiality of the human body and mind.

The following represents a partial list of the factors that influence the nutrition of the human animal as he goes through life.

1. Infant feeding—whether breast or bottle.
2. Too little, too much, or too monotonous food habits in early childhood.
3. Clean plate club.
4. Food fads of the individual race or nation.
5. Diversified methods of preparing food.
6. Luscious pictures of food in current magazines.
7. The unending interest of the obese in anybody's reducing diet.
8. The capriciousness of appetite.
9. The willingness to buy anybody's vitamins.
10. Faulty mineral intake.
11. The social implications of mealtime.
12. Overeating associated with anxiety.
13. The overeating of gluttony.
14. Overweightness and its consequences.
15. The effect on food intake and digestion of various types of responsibilities.
16. Limitations or excesses afforded by budgets.
17. Empty chairs around the dinner table.
18. The status of the endocrine system.
19. The presence or absence of chronic illness.
20. The effects of bed rest.
21. Happy, satisfactory employment.

Opportunities in the Science of Nutrition

The effects of these twenty-one factors on the legions of the long-lived have been and are being investigated by physical, chemical, and X-ray methods. True, gerontology has not attained the exactness of the science that studies the rings of the great giants of the forest, but areas of malnutrition become evident in man as well as in the tree, and both must reap the harvest of their yesteryears.

The above list also serves to remind you how multitudinous are the contacts of the field of nutrition and how varied are the disciplines it touches. Success in the science of nutrition often depends on factors quite remote from the simple intake and utilization of food. Cooperation among those interested will present an unbeatable team. Gerontology, the science of aging—or better yet, the art of living—presents to you in nutrition a challenge to become a part of this many-disciplined effort to solve the problems of aging.

Maternity Care in the U.S.

More babies than ever before are born in hospitals today, according to the Health Information Foundation. In 1935, only 37 per cent of the babies were born in hospitals, and 13 per cent of all births were unattended by doctors. In 1956, almost 95 per cent all of babies in this country were hospital-born, and doctors attended 97 per cent of all births.

Maternity medical service varies widely with education and income. Ninety per cent of mothers with some college training see a doctor at least once during the first three months of pregnancy, but of those with eight or less years of school, only 40 per cent do so.

In families with annual incomes of $5000 or more, 80 per cent of the expectant mothers see their doctors seven or more times during pregnancy. In families with incomes below $3000, however, one out of seven mothers does not see a doctor at all during pregnancy, and fully two-thirds have fewer than seven prenatal visits.

Dietary Consultation for Nursing Homes and Homes for the Aged

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Planned Dietary Consultation to
Homes for the Aged,
Community Nutrition Section,
The American Dietetic Association, 1955–56

THE OLDER segment of our population has grown rapidly in the past decade. Socio-economic changes occurring simultaneously have resulted in the establishment of an increasing number of nursing homes and boarding homes giving care to the elderly and to the chronically ill. A recent survey revealed that there are now more than 25,000 such homes in the U. S. serving more than 450,000 persons (1). Since the average size of these homes is 15 to 25 beds, and a high percentage of them attempt to provide service at a cost within reach of present-day meager retirement incomes, it is understandable that the operators of these homes encounter many difficulties. One of the greatest of their problems is that of meeting the dietary needs of their patients, for few such homes are known to have available the services of trained dietitians.

Preliminary Study by Diet Therapy Section

In the years 1949–51 the Diet Therapy Section of The American Dietetic Association made a study of food service in homes for the aged and infirm. The results of this study showed that a great area of unmet need existed (2). In few homes were trained dietitians employed to supervise food service and the preparation of modified diets prescribed by physicians. Although most states had developed regulations for the licensure of nursing homes and homes for the aged, few had developed specific requirements regarding food service beyond basic provisions for food sanitation. Dietary consultative service was provided to licensed homes by state agencies in only two or three states. In the published report of this study it was recommended that arrangements be made for "planned, regular consultative service by dietitians to operators of institutions for the aged." It was suggested that state and local dietetic associations cooperate with health and welfare agencies to this end.

Community Nutrition Project for Follow-Up

In 1954, nutritionists and dietitians became aware that little progress had been made in many states toward providing dietary assistance to homes for the aged. To stimulate interest on the part of all concerned and to promote the later establishment of a regular service by official agencies, the Association's Community Nutrition Section began a project of "Planned Dietary Consultation to Homes for the Aged." Letters were written to community nutrition chairmen of the state dietetic associations giving the objectives of the project and making suggestions for steps to be taken by state and local dietetic groups. These steps were recommended:

(a) Contact state health and welfare agencies to determine how many nursing homes and homes for the aged are in the state and what services they receive from licensing agencies or others.

(b) Find out the problems related to food service as recognized by the operators of these institutions and by personnel of agencies working with them.

(c) Make the acquaintance of officers of nursing home associations and explore possibilities of working cooperatively with these organizations at the state or local level.

(d) Work with interested persons and agencies to provide dietary consultative services by whatever methods seem most practical and effective.

First reports received from the state community nutrition chairmen revealed that in Maryland and Delaware dietary consultative services were already being provided regularly to nursing homes and rest homes by nutritionists on the staffs of the state health departments. In Indiana, California, Missouri, Maine, and New York, similar services were available on a very limited basis by nutritionists employed by official health or welfare agencies. Other states reported that preliminary surveys had been made to determine the need for dietary assistance to these homes and possible ways of providing it. Survey methods varied considerably, but all included two or more of the following:

(a) Visits by nurses and social workers to homes as representatives of a licensing agency to obtain an appraisal of nutrition and food service problems.

(b) Questionnaires sent to operators of homes to obtain an expression regarding the dietary problems with which they would like assistance.

(c) Visits by dietitians or nutritionists to selected homes (with operator's permission obtained several days in advance of visit) to survey food service facilities and methods and to query the operators regarding their food service problems.

(d) Participation by dietitians in programs of the regular meetings of associations of nursing home operators to lead discussions on dietary problems. Such discussions yielded valuable information regarding the problems recognized by the operators and the types of assistance most acceptable to them.

Workshops, Institutes, and Conferences

This period of surveying to determine the situation in each state was closely followed by the development of plans for rendering dietary consultative services where services were both needed and desired. Generally, the group service given through institutes, workshops, and conferences held in cooperation with licensing agencies and associations of nursing home operators seemed the most popular approach to the problem. Nutritionists from Maryland, Delaware, and Indiana who had previously participated in such conferences assisted the A.D.A. committee in preparing a bibliography of materials which might prove helpful to the other states. This was distributed to state community nutrition chairmen and to local chairmen on request. In addition, there was a sharing of experiences among the dietitians and nutritionists at the 1955 Annual Meeting, in a group discussion.

In 1956, workshops and conferences for home operators or their food service personnel were held in seven additional states. In Alabama, there were three-day conferences planned cooperatively with the state hospital association and held in three different sections of the state. Missouri held three one-day workshops in cooperation with local health departments and local nursing home associations. Rhode Island and Minnesota each had a one-day institute, in cooperation with licensing agencies and nursing home associations. Community nutrition committees of local dietetic associations in Wisconsin, Illinois, New York, and Tennessee were responsible for the organization of five additional workshops of from half to one day in length to assist home operators with menu planning and food purchasing problems. In Milwaukee, this service will be continued and expanded by the nutritionist employed by the city health department.

Another type of service provided in several states has been the participation by nutritionists and dietitians in meetings of state and regional organizations of nursing home operators. Ohio, Wisconsin, Illinois, and Missouri reported that this type of activity usually opened the way for further services.

Consultation and Use of Shared Dietitians

Individual consultative services have been given by dietitians and nutritionists to homes in many areas. Sometimes this service was incidental to a pre-workshop visit made to acquaint the dietitian with food service problems in the home, but more often it has been the result of a workshop or conference discussion in which the home operator expressed a desire for more detailed assistance.

In a few cases this type of consultation has led to an arrangement by which a dietitian regularly serves two or more institutions. Such is the case of a hospital dietitian in an Ohio city who is employed on her "day off" by a nearby home for the aged to plan menus and give general assistance with food purchasing and preparation. The operator of this home is pleased to have this service which was previously not available and the dietitian finds the work stimulating and the salary supplement useful.

Pamphlets and Periodicals

Publication of materials to meet specific needs expressed by nursing home operators has been provided in Alabama, California, Maine, New York, Ohio, Tennessee, Texas, Washington, and Wisconsin. This has usually been in the form of a periodic release, such as a monthly or quarterly newsletter giving helpful information on one phase of food service. In addition, Ohio is now writing a diet manual especially to assist the nursing home and small hospital in the preparation of modified diets, and Tennessee has prepared a handbook to assist the nursing home in menu planning. Missouri, also, has just issued a diet manual for use in small hospitals without dietitians. California provides a menu evaluation service and a means of exchanging favorite recipes to nursing homes in the San Jose area. The Maine Dietetic Association has made its diet manual available to physicians for use in nursing homes.

The Outlook

Dietary assistance rendered by dietitians and nutritionists has reached, thus far, an estimated 640 nursing homes in fourteen states, with a favorable outlook for expansion into other states and into a permanent type of service. In general, the services given have been voluntary, but as their value becomes apparent to more home operators, it will be possible to establish additional positions for part-time or shared dietitians. This seems to be the most satisfactory solution to the problem of providing dietary services for homes in urban communities. Homes in villages and in rural areas may be unable to find a dietitian to "share" and thus will need the services of nutrition or dietary consultants working with state health or welfare agencies.

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BIOGRAPHICAL NOTES FROM THE HISTORY OF NUTRITION

Gerrit Grijns—May 28, 1865–November 11, 1944

The search for the cause of beriberi provides one of the fascinating stories of the history of medicine and of nutrition. The cause, dietary deficiency, was found long before the specific vitamin was isolated by Jansen and Donath in 1926 and synthesized, chemically identified, and named "thiamine" by Williams in 1936.

The story begins back in 1886 when the Dutch government sent a commission to the East Indies to investigate the causes of beriberi and advise remedies. Christian Eijkman spent eight years in the tropics studying the problem and through his experiments on fowls showed that a diet of polished rice produced beriberi but "the why" was not understood. Ill health caused Eijkman's return to Holland and Grijns continued his investigations.

Gerrit Grijns was born in Leerdam, Holland, May 28, 1865, the son of Cornelius Dirk Grijns and Janetta C. A. M. Seret. He went to school in Delft and then to the University of Utrecht (1885) to study medicine. He was an able student and engaged in research at the same time so that he presented a thesis and obtained his M.D. degree in 1891. His thesis won him a Donders Scholarship by which he studied a semester of physiology under Carl Ludwig in Leipzig. The next year he married Miss J. G. deWilde and went to the Dutch East Indies as a medical surgeon where he did research on tropical physiology. One of his papers on the permeability of red blood cells is a classic on the subject. In June 1896, Grijns was appointed to succeed Eijkman.

At this time it was recognized that beriberi in man and polyneuritis gallarium in fowls were both caused by a diet solely of polished rice and could be prevented or cured by the use of unpolished rice. Possible explanations were that the disease was caused by bacteria or by the production of some toxin from which the unpolished rice contained an antidote. Grijns attacked the problem systematically and without bias. For three years he experimented with fowls. Native beans or brown rice maintained healthy birds. He fed polished rice plus various mineral elements and salt mixtures, but these did not prevent polyneuritis. Polished rice from different countries was used, and fat (olive oil) was added to the rice, but the birds died as before. Meat which had been extracted for two days with water and then dried gave no protection, nor did a diet of potato starch and milk sugar. Thus it was shown that no known dietary factor could prevent polyneuritis. Grijns concluded in 1901: "There occur in various natural foods, substances which cannot be absent without serious injury to the peripheral nervous system. The distribution of these substances in the different food stuffs is very unequal." Thus Grijns clearly set forth with experimental data, the evidence for beriberi as a deficiency disease. But few were ready to accept or apply his findings and, being published in Dutch, they were not readily available.

Grijns taught anatomy, physiology, and ophthalmology to native doctors. In 1902, he returned to Holland because of his health, but again went to Batavia in 1904 and continued his teaching and research until 1917 when he returned permanently to his native land. He taught tropical hygiene in Amsterdam (1919) and at Utrecht (1920) and then became professor of animal physiology at the Agricultural University of Wageningen (1921) where he worked on vitamin E and remained till his retirement in 1935. Grijns was President of the International Conference on Tropical Hygiene in Amsterdam in 1938. In 1940 he received the Swammerdam Medal inscribed "Founder and Father of the Modern Science of Nutrition." In his last years, Grijns suffered from paralysis agitans and died November 11, 1944.

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Food Selection and Well-Being of Aging Women[1]

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A LONGITUDINAL study (1) of women living in an urban Michigan area provided data for this description of food selection and well-being of aging women. In 1948 original survey data on food intake, physical well-being, and social and economic status were obtained for 97 white and 104 Negro women. Since then, at two- to three-year intervals, efforts have been made to recontact each of these women. In 1955, 54 of the white and 63 of the Negro women from the original survey group were available for interview. In 1948 these subjects ranged between 40 and 85 years of age. The mean age of the white women was 58 years; that of the Negroes was 60. This report is based primarily on the 1948 and 1955 data.

Experimental Pattern

The experimental pattern for the survey study has been described (2, 3). This report deals primarily with relationships between nutritive quality of diets, subjective estimates of physical well-being, and body weight of the women contacted in both 1948 and 1955. Mortality rate for the period is also considered.

Standards used to express nutritive quality of diets were those outlined by the Food and Nutrition Board (4) for average weight, moderately active individuals in appropriate age groups.

Twelve symptoms (3) frequently reported by aging women were used as a subjective measure of physical well-being of the subjects who were classified according to the total number of symptoms reported.

Subjects were also classified according to body weight. "Ideal" body weight for individuals was taken to be the weight of an average normal person of the same sex and height at twenty-five or thirty years of age (5). The four weight classes used were:

Normal weight: within 10 per cent of ideal weight
Underweight: over 10 per cent below ideal weight
Overweight: 11 to 20 per cent above ideal weight
Excess overweight: over 20 per cent above ideal weight

The Sample

Table 1 presents a description of the 54 white women and 63 negro women who were available for interview in both 1948 and 1955.

TABLE 1 Description of 54 white women and 63 Negro women in 1948 and 1955

CHARACTERISTIC	PER CENT OF WOMEN			
	White women		Negro women	
	1948	1955	1948	1955
Educational Background				
8 grades or less	39		61	—
9 to 14 grades	52		39	—
Over 14 grades	9		0	—
Employment Status				
No work for pay	59	75	56	70
Unskilled domestic	15	4	30	23
Other	26	21	14	7
Size of Household				
Lives alone	17	13	0	5
Self and one other	36	47	28	36
3 or more persons	47	40	72	59
Family Income				
Uncertain or low	24	35	51	43
Moderate	48	30	49	52
High	28	35	0	5

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[4] Acknowledgment is made of the contributions of members of the staff who gave technical assistance to the problem.

Sixty-one per cent of the Negro but only 39 per cent of the white women had completed no more than eight grades of school. Nine per cent of the white women had completed over fourteen grades of school; none of the Negro women attained this level of formal education.

In both 1948 and 1955 a larger percentage of Negro than white women were employed as unskilled domestics. In 1955 fewer of each group worked for compensation.

In both years, a larger percentage of Negroes lived in households of three or more persons. In 1955, however, both groups showed increased numbers in two-person households. A greater percentage of Negro women reported uncertain or low incomes in both years. The white women appeared to be better off financially.

Dietary Standards of Subjects

A recent report of eating habits of these subjects (3) indicated that 48 per cent of the Negro but only 6 per cent of the white women ate fewer than three meals a day. The two groups selected similar kinds and numbers of foods during a day; however, while the white women had rigid eating patterns, the Negroes displayed a more flexible choice of food for various meals. The white women reported more servings of milk, whole grain or enriched cereals, and desserts. The Negroes had more servings of meat, fats, and green and yellow vegetables.

Figure 1 shows the percentage of white and Negro women who reported diets which furnished various quantities of nutrients in 1948 and 1955.

In both years, fewer than 5 per cent of the 54 white women reported food intakes that provided 80 per cent or more of recommended quantities of calories and all seven nutrients shown here, and only 50 per cent met 40 per cent of the recommendations. Less than 50 per cent of these women had 80 per cent or more of recommended quantities of calories. However, about 70 per cent reported food intakes which provided 80 per cent or more of the recommended quantities of protein.

The open portion of the bars at the right of the graph indicate that calcium, vitamin A, and ascorbic

TABLE 2 **Symptoms reported by women**

SYMPTOM	PER CENT REPORTING SYMPTOM			
	White women		Negro women	
	1948	1955	1948	1955
Unexplained tiredness	56	46	41	48
Backache	54	35	33	49
Persistent headache	52	28	27	40
Joint pains	48	54	56	48
Shortness of breath	44	41	44	43
Loss of appetite	39	43	17	59
Swelling of ankles	28	39	32	44
Stomach pains	20	17	19	14
Mouth sores	19	11	6	16
Constipation	15	41	41	54
Nosebleed	11	4	13	3
Running sores	9	6	0	6

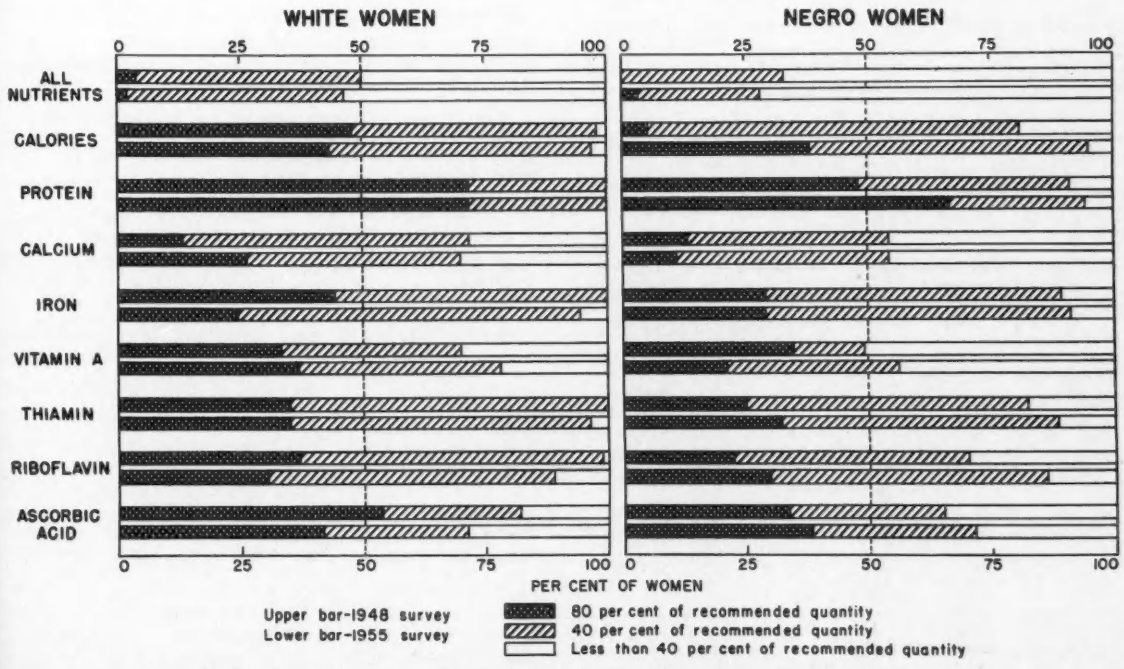

FIG. 1. *Per cent of women with various per cents of recommended nutrient intakes*

acid for the white women were the three nutrients which most often fell below 40 per cent of recommendations.

The nutritional standard of the Negro subjects appears to be somewhat lower than that of the white subjects. In 1948 none of the Negroes reported diets which supplied 80 per cent or more of all nutrients, and in 1955 less than 5 per cent met this dietary standard. In 1948 and 1955, only 33 and 28 per cent of these women, respectively, received at least 40 per cent of recommended quantities of all nutrients which were evaluated. In 1948, only 5 per cent reported intakes of 80 per cent or more of recommended quantities of calories, whereas in 1955, 38 per cent met this caloric standard. As in the case of the white subjects, protein appeared to be the nutrient most apt to be consumed in recommended quantities, and calcium, vitamin A, and ascorbic acid were most often below 40 per cent of recommendations.

The most marked differences in the nutritional pattern of these two groups were that approximately 50 per cent of the white women reported food intakes that furnished as much as 40 per cent of recommended quantities of all nutrients evaluated, whereas roughly 30 per cent of the Negroes' diets met this standard. Diets of Negro women were more frequently low in calcium and vitamin A than those reported by white women.

A combination of the previously described eating patterns and backgrounds of these two groups of women may account in part for these differences in nutritional quality of their diets.

Physical Well-Being of Women

Table 2 presents the list of symptoms used in making subjective estimates of physical well-being as well as the percentage of women reporting each symptom in 1948 and 1955. The symptoms are listed in the order of frequency of reporting by the white women in 1948. This order is different for the two groups and for the two years. There are, however, three symptoms reported by over 40 per cent of these women each time they were questioned. These were: unexplained tiredness, pains in the joints, and shortness of breath. They appeared to be the first symptoms to cause chronic complaints with these aging women.

In 1955 higher percentages of both white and Negro women reported loss of appetite, constipation, and a tendency for ankles to swell.

Table 3 shows the relationship between the total number of symptoms reported to the per cent who reported the three most common symptoms (unexplained tiredness, joint pains, and shortness of breath). In 1948 twenty white women reported zero to two symptoms. Only 5 per cent of these complained of unexplained tiredness and joint pains and 10 per cent complained of shortness of breath. Sixteen women reported six or more symptoms; 94, 81, and 69 per cent respectively of these women reported unexplained tiredness, joint pains, and shortness of breath. A similar relationship is shown for the 1955 survey of the white women, and for both surveys of the Negro women.

Percentages shown here are based on relatively small numbers; however, the similarity of results from the repeated survey contacts lends considerable weight to the results. Further, similar patterns were also obtained for the other nine symptoms listed in Table 2. Thus the frequency of reporting each of the twelve symptoms appears to increase as the total number of symptoms for individual women increases.

TABLE 3 Relation of number of symptoms reported to frequency of reporting individual symptoms

NUMBER OF SYMPTOMS	NUMBER OF WOMEN		PER CENT REPORTING INDIVIDUAL SYMPTOM					
			Unexplained tiredness		Joint pains		Shortness of breath	
	1948	1955	1948	1955	1948	1955	1948	1955
White Women								
0 to 2	20	20	5	25	5	25	10	10
3 to 5	18	23	78	48	67	56	61	48
6 or over	16	11	94	82	81	100	69	82
Negro Women								
0 to 2	21	14	10	7	29	14	19	14
3 to 5	34	34	50	44	68	47	47	38
6 or over	8	15	88	93	75	80	100	80

Diet and Physical Well-Being

The relationship between the total number of symptoms reported and the percentage of women with low intakes of the nutrients most frequently below 40 per cent of recommended quantities is shown in Table 4.

The greater the number of symptoms reported, the higher was the percentage of subjects with diets

TABLE 4 Relation of dietary standard to symptoms reported

NUMBER OF SYMPTOMS	PER CENT BELOW DIETARY STANDARD*							
	All nutrients		Calcium		Vitamin A		Ascorbic acid	
	1948	1955	1948	1955	1948	1955	1948	1955
White Women								
0 to 2	40	45	20	35	20	15	20	25
3 to 5	56	56	28	26	33	17	17	30
6 or over	56	64	38	27	38	45	19	36
Negro Women								
0 to 2	57	64	43	36	48	43	24	21
3 to 5	68	71	50	53	47	38	35	24
6 or over	88	80	38	40	75	60	62	47

* "All nutrients" refers to women with less than 40 per cent of recommendation of one or more nutrients. "Calcium," "vitamin A," and "ascorbic acid" refer to women with less than 40 per cent of recommendations of these nutrients.

below 40 per cent of recommended quantities of one or more nutrient. This relationship was the same for vitamin A. Except for the 1948 observation on the white women, a similar relationship is indicated between number of symptoms reported and ascorbic acid intake. The relationship between number of symptoms reported and dietary calcium is inconsistent.

Table 5 shows the weight classification of the women. Weights of several Negro women could not be classified because of insufficient data, and these women are grouped as uncertain. In both years, a larger percentage of the Negroes could be classed as excessively overweight, and for both groups, the incidence of excessive overweight was lower in 1955 than in 1948.

Table 6 shows the relationship between intake of calories and nutrients most frequently below recommended quantities and body weight. Overweight in these women did not appear to be associated with the percentage of subjects whose diets fell below 40 per cent of recommended quantities of one or more nutrients or with low intakes of vitamin A or ascorbic acid.

The estimates for adequacy of caloric intake were based on recommendations for average weight, moderately active individuals. Even with this evaluation, the tendency was for more overweight women to report caloric intakes below 40 per cent of the recommendations than normal and underweight women report. There was also a tendency for a larger percentage of overweight women to have low calcium intakes.

TABLE 5 Weight classification of women

WEIGHT CLASSIFICATION	PER CENT OF WOMEN			
	White women		Negro women	
	1948	1955	1948	1955
Uncertain	0	0	3	14
Underweight	17	17	6	6
Normal	39	44	27	24
Overweight	17	17	17	17
Excess overweight	28	22	46	38

Previous investigations (5) have reported a marked tendency for overweight women to report lower total caloric intakes than women of normal weight.

The number of subjects who fell within specific weight classes was small. However, similarity of results from the two survey years indicated that these observations were made with people whose weight was essentially static (3). For this reason, data from the original 1948 survey of 97 white and 104 Negro women have been summarized in Table 7 to illustrate further the relationship between nutrient intake and body weight.

For the white women there was a decrease in mean caloric intake as the degree of overweight increased. Excessively overweight women in this group showed a lower mean intake of all nutrients than did the white women of normal weight.

The relationship between caloric intake and overweight for the Negro women was similar to that of the white. Otherwise there appears to be little relationship between mean nutrient intakes and body weight classification. The mean intakes of all nutrients except vitamin A was lower for the four weight classes of Negro women than for comparable classes of white women. Forty-four per cent of the Negroes were classed as excessively overweight compared with only 26 per cent of the white women. The more frequent occurrence of excess overweight in the Negro women may be associated with the lower nutrient intakes.

Table 8 is also based on records obtained for the original survey plus mortality data obtained in 1955 and indicates relationships between certain sample characteristics and mortality rate in the white and Negro women. The mortality rate was higher in the Negro group. For both the Negro and white women, mortality was higher for women over sixty-five years of age than for those under sixty-five. It was also greater for women who reported diets with less than 40 per cent of recommended quantities of one or more nutrient than for those who had intakes of 40 per cent or more of recommended quantities of all nutrients.

The mortality rate of white women reporting six

TABLE 6 Relation of nutrient intakes to body weight

WEIGHT CLASSIFICATION	NUMBER OF WOMEN		MEAN WEIGHT		PER CENT BELOW NUTRIENT STANDARD									
					All nutrients*		Calories		Calcium		Vitamin A		Ascorbic acid	
	1948	1955	1948	1955	1948	1955	1948	1955	1948	1955	1948	1955	1948	1955
White Women														
			kg.	kg.										
Normal to underweight	30	33	58	56	50	48	0	3	23	18	37	27	17	24
Overweight	24	21	78	78	50	62	4	5	33	48	21	14	21	38
Negro Women														
Normal to underweight	21	19	57	58	57	79	5	0	38	47	43	47	48	42
Overweight	40	35	83	82	70	66	28	8	50	40	52	40	25	23

* Women with less than 40 per cent of recommendation of one or more nutrients.

TABLE 7 **Relation of nutrient intake to body weight**

WEIGHT CLASS	NUMBER OF WOMEN	MEAN BODY WEIGHT	MEAN NUTRIENT INTAKE							
			Calories	Protein	Calcium	Iron	Vitamin A	Thiamine	Riboflavin	Ascorbic acid
White Women										
		kg.		*gm.*	*gm.*	*mg.*	*I.U.*	*mg.*	*mg.*	*mg*
Underweight	15	48	1572	56	0.56	0.94	4113	0.88	0.93	52
Normal	39	61	1802	58	0.53	1.01	4433	0.93	1.26	53
Overweight	17	69	1789	43	0.43	1.03	6001	0.93	1.25	61
Excess overweight	25	82	1443	47	0.37	0.93	3244	0.82	1.19	52
Negro Women										
Underweight	9	48	1112	46	0.40	0.86	8476	0.70	0.88	36
Normal	28	58	1179	44	0.37	0.82	4493	0.67	0.89	42
Overweight	17	72	1075	44	0.36	0.88	4232	0.67	0.85	45
Excess overweight	46	85	1017	43	0.34	0.81	4982	0.68	0.81	52

TABLE 8 **Relation of certain characteristics to mortality rate**

CHARACTERISTIC	PER CENT MORTALITY*	
	White women	Negro women
Age		
Under 65 years	8	11
Over 65 years	21	45
Nutritional Standard		
40% or more of all nutrients	10	17
Less than 40% of one or more nutrients	17	23
Number of Symptoms Reported		
0 to 2	16	18
6 or more	13	37
Body Weight		
Underweight to overweight	14	29
Excess overweight	12	11

* Over-all rate for white women, 14 per cent; for Negro women, 21 per cent.

or more symptoms was slightly lower than that of women who reported zero to two symptoms. The opposite is true for the Negroes. The mortality rate for both white and Negro women was lower for those classed as excessively overweight than for the combined classes of underweight, normal weight, and overweight individuals.

Summary

Recall dietary histories and subjective estimates of physical well-being from 54 white and 63 Negro women between 40 and 90 years of age were obtained in both 1948 and 1955. In both years, less than 5 per cent reported food intakes that provided 80 per cent or more of recommended quantities of calories and the seven nutrients evaluated. Intakes of less than 40 per cent of recommended quantities of calcium, vitamin A, and ascorbic acid were frequently reported.

In both years, over 40 per cent of these women complained of unexplained tiredness, pains in the joints, and shortness of breath. In 1955 more women complained of loss of appetite, constipation, and a tendency for ankles to swell than in 1948. Vitamin A and ascorbic acid intakes below 40 per cent of recommendations were reported more frequently by women with six or more symptoms than by those with from zero to two symptoms.

Approximately 40 per cent of the white and 60 per cent of the Negro women could be classified as overweight. Overweight in these subjects was often associated with low intakes of calories and poor quality diets.

Mortality rates of the Negro women between 1948 and 1955 were higher than those for white women. For both groups, the mortality rate was higher among women who reported intakes of less than 40 per cent of recommended quantities of one or more nutrient than among those with higher intakes of nutrients.

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In 1917, one in every ten babies born alive in this country was unable to survive the first year of life. Today the ratio is one in forty.—*Health Information Foundation.*

Nutritional Status and Dietary Habits of Older People[1]

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With advancing age, a decrease in calories and other nutrients was a common finding in 2800 women and 250 men. Group averages were found to be below the recommended allowances. On the other hand, obesity and poor food selection were also common A review of food intake and laboratory and physical findings is included.

A NUMBER OF recent publications have reported some of the results of regional research which was started about eight years ago in which the Human Nutrition Research Branch of the Department of Agriculture has cooperated. The general plan for this study included selecting the population groups and obtaining data on nutritional status and dietary intake, followed by interpretation and application of the findings.

A population group selected for study is characterized—age, geographic location, and socio-economic status being some of the factors which may be specifically considered. The people themselves are examined as to physical condition and, depending on the nature of the particular study, analyses are made for some of the nutritionally important substances in blood or excreta.

Dietary information is obtained, often through interviews in which subjects report all foods eaten in the previous 24 hr. Sometimes a longer dietary history is taken. Quantitative measures of food intake for a specified time may be recorded. The estimation of the actual nutrients provided by the diets is made by calculating from food composition tables or, in some intensive studies, through laboratory analyses of the diets.

The data thus obtained are brought together and evaluated. Interrelationships are sought among aspects of nutritional status or of diet. For some studies, balances of intake over outgo of nutrients can be calculated. New or revised norms for physical status may become possible, i.e., for height, weight, and blood constituents. Suggested average portion weights have already been published by the North Central region which were based on weights of food actually eaten by women from thirty to over ninety years old (1).

Application of all such new information leads to more or better figures for nutritional requirements, dietary standards, and so on. Always, there emerge problems for further research.

Problems Encountered

This brief description does not indicate, of course, the many difficulties encountered, such as:

(a) Public relations, transportation, and other obstacles met in obtaining and working with such population groups.

(b) Debatable—and debated—differences in the methods by which nutritional status can be characterized through clinical observations, physical measurements, or laboratory analyses.

(c) Different—and to some extent mutually exclusive—approaches to qualitative and quantitative evaluation of past and present diets.

However, the regional research groups have been well aware of the problems and have made every effort to select the most feasible methods for each essential measurement and to select measurements

[1] Presented at the 38th Annual Meeting of The American Dietetic Association in St. Louis, on October 19, 1955.

[2] Present position: Director, Clothing and Housing Division, Institute of Home Economics, Agricultural Research Service, U.S. Department of Agriculture.

which would be most applicable to the studies. For clinical evaluations, the cooperation of physicians and public health workers has been generous. For nutrient analyses of small blood samples, two research leaders were given practical instruction in Bessey's laboratory. Their knowledge was then passed on, through two workshops, to staffs from the different states. The various methods of measuring food intake—and the problems involved in each—were systematically reviewed and evaluated by leaders from many states in a conference using material later summarized in a publication by the National Research Council (2).

It seems timely to look at various reports from this regional cooperative research and to consider some of the nutritional information now available. We shall consider here only the published work on older people from the North Central and Western regions and, omitting consideration of foods as such, look only at the nutrients provided by those foods in relation to some of the measurements of physical well being which were applied.

The groups of older people studied differed somewhat from state to state. In the North Central Region, the Iowa and South Dakota Experiment Stations studied women thirty years old and over in area samples representative of all the women in Iowa and of all except those in Indian reservations in South Dakota—650,000 women in Iowa and 149,200 in South Dakota. Coordinated balance studies on women thirty years old and over were done in Iowa, Michigan, Missouri, Nebraska, and Wisconsin on specific segments of the populations near the Experiment Stations. In California, studies were made on men and women fifty years old and over in San Mateo County.

Energy Values of Diets

Figure 1 shows average caloric intakes for four groups of women by decades from age thirty to seventy and over. People over eighty were studied, but since the number was small, they are grouped here with those over seventy. The data on North Central women (3) come from intensive balance studies and represent weight of food eaten during seven days by 136 subjects in five states (44 in Iowa, 18 in Michigan, 15 in Missouri, 52 in Nebraska, and 7 in Wisconsin). The Iowa data (4) were calculated from food eaten in the previous 24 hr. as recalled by 1072 women during interviews with the research workers. The South Dakota data (5) represent similar information on 339 women. The data for 274 California women (6), fifty or more years old, represent seven-day records in household measures. Also shown are 24-hr. recall figures reported by Clark and Fincher (7) in a U. S. Department of Agriculture study in the winter of 1948, of women in three cities, namely: Buffalo, Minneapolis-St. Paul, and San Francisco.

A general trend toward decrease of energy intake with age is evident. For the earlier age-decades, the average intakes are considerably lower than the National Research Council allowances of 2300, 2100, and 1800 calories for fairly active reference women at ages twenty-five, forty-five, and sixty-five, respectively (8). These low levels are even more striking when we consider that the reference woman is 62 in. tall and weighs 121 lb., whereas the South Dakota women, the only ones for whom heights have as yet been published, averaged 2 in. taller.

Figure 1 also compares the California women living in their own homes with two groups of California men. One group of 215 California men, fifty or more years old, were living in their own homes; the other group of 44 men, sixty or more years old, were living in a county home. The diets in the county home were calculated from three-day intake records obtained by nutritionists, whereas those for the men and women in their own homes represented 24-hr. recalls. The average intakes of the California men living in their own homes were significantly higher than those of the women. However, although higher than those of the women, the intakes of these men were somewhat lower than the National Research

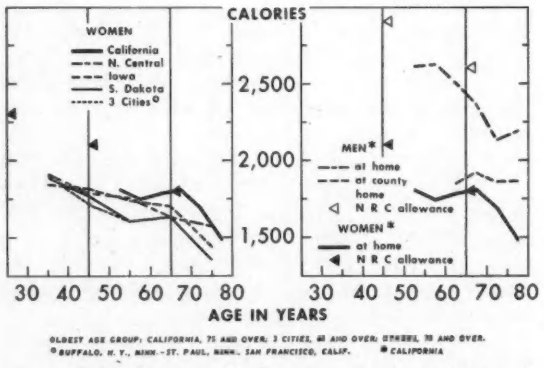

FIG. 1. *Food energy intakes of women in various parts of the United States and of men in California compared with Recommended Dietary Allowances.*

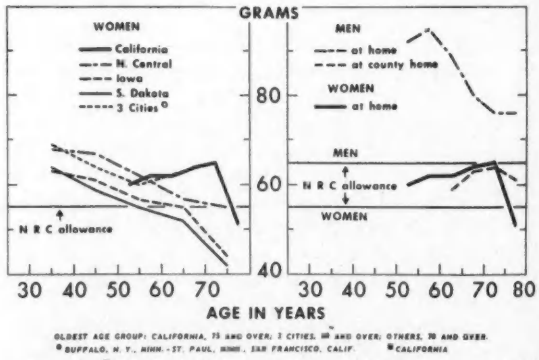

FIG. 2. *Protein intakes of women in various parts of the United States and of men in California, compared with Recommended Dietary Allowances.*

Council allowances of 2900 and 2600 calories for men at ages forty-five and sixty-five, respectively.

When energy intakes were expressed as values per kilogram body weight, the intakes of the San Mateo men living in their own homes were still significantly greater than those of the women. The intakes per kilogram of the men in the county home were lower than those of the other men and not significantly different from those of the women in the same age groups. Presumably, the men in the institution had less choice in kind of food—and in amount—than the men and women of a generally higher socio-economic level living in their own homes. The relatively low intakes of these men as compared with men living in their own homes probably reflect the men's past history as well as the institutional situation.

One step in understanding the nutritional significance of the findings on energy intake is to determine the percentage of diets providing different energy values. Such calculations have already been reported for the South Dakota, Iowa, and North Central groups. For example, Burrill reported (5) that the diets of South Dakota women averaged 1705 calories. Thirty-four per cent of the diets provided fewer than 1500 calories and 25 per cent provided 2000 or more. These figures are fairly close to those reported by Clark and Fincher (7) for the women in three cities.

The Iowa State figures have been broken down for different caloric groupings. In an early report (9), Swanson showed that with a mean of 1735 calories, individual diets ranged from less than 200 calories to more than 4000. From another Iowa report (10), it may be calculated that 17 per cent of the women reported diets providing under 1200 calories, and 15 per cent over 2400.

In both Iowa and South Dakota, the farm women's diets were highest in energy value.

Protein Intakes, Nitrogen Balances, and Related Blood Values

Figure 2 shows the average protein intakes by age decades of the Iowa (11), South Dakota, North Central, and California women and of the women in three cities. A downward trend is evident except between ages sixty to sixty-nine for the California women and for the women in three cities. Below age sixty, average protein intakes of the various age groups were slightly above the National Research Council allowance of 55 gm.

Figure 2 also compares the protein intakes of the California women with those of the two groups of California men. The men in their own homes had intakes well above the allowance of 65 gm. As with caloric intakes, the men in the county home showed protein intakes much lower than those of the other men and slightly below the National Research Council allowance.

Although average intakes by age groups met the allowances in most cases, other aspects of the protein situation need consideration. From the nitrogen balance studies done by the North Central group, Ohlson, Brewer, and co-workers (3) reported a wide range in individual nitrogen intakes (21 to 105 gm. protein daily), both extremes being found in women of the fifty- to fifty-nine-year age group. The nitrogen intake and retention data are shown by age decades in Figure 3. Considerably more than half (58 per cent) of the women showed a negative nitrogen balance.

Except for the thirty- to thirty-nine-year decade, the average balance for each decade group was negative. Although these nitrogen losses were not, on the average, more than 5 per cent of the intake, such consistent trends arouse us to the possible danger that on a long-term basis, the freely chosen diets of many of these women were insufficient or barely sufficient to maintain protoplasmic tissue. These nitrogen balance experiments also showed that when daily caloric intakes were less than 1500, the nitrogen retentions were negative, even though an average of 50 to 63 gm. protein were ingested. In such cases, some of the protein was probably being used as a source of energy rather than to maintain tissue function. The authors calculated that, in order to maintain nitrogen equilibrium on the type of diets eaten by these women, approximately 1800 calories would be needed.

In the California studies, protein as well as iron intake was correlated with blood hemoglobin. No correlation of serum protein with protein intake was found, however, nor was there any age or sex difference. The average serum protein levels (for these subjects fifty years old and over) were 10 to 15 per cent lower than those usually quoted for young adults. In another article on these California subjects (12), it was reported that in the men, but not the women, there was a direct but not striking relationship between non-protein nitrogen in the blood and protein intake; also between uric acid of the blood and protein intake. The mean levels for non-

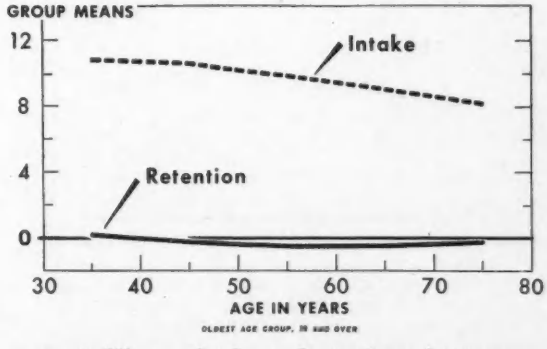

FIG. 3. *Nitrogen intakes and retentions of 136 women in the North Central Region, by age decades (1947–51).*

protein nitrogen were about 40 per cent higher than those usually found in young adults. Blood creatinine levels were not affected by protein intake. The values obtained are higher than those usually quoted for young adults.

Body Weights

In a report on the public health aspects of the cooperative studies in California, Chope and Dray (13) noted that obesity and hypertension were the most common conditions requiring attention. They found about twice as much hypertension among obese subjects as in those not obese. They found less overweight in people sixty-five years old and over and suggest that perhaps those in the older age brackets who are overweight are less likely to live into the sixty-five-plus age group.

Gillum and associates (14) reported that about one-fourth of the California men and women who ranged in age from fifty years to over seventy were underweight and about one-fourth were overweight. The Iowa and South Dakota groups of women who ranged in age from thirty years to over seventy showed only about one-tenth underweight and almost one-half overweight. Figure 4 shows weights and height by decades for South Dakota and illustrates the increase in average weight with age. For the women in this state, average weights were highest in the sixty to sixty-nine age-decade. Grouping their women by height and age, the Iowa workers found a steady increase in weight through the fifty to fifty-nine age-decade. They suggest, as did the California workers, that the lower average weights in decades after the sixtieth year may be the weights of survivors. In Iowa, the women who were definitely overweight not only reported more symptoms that might be considered characteristic of suboptimal health but reported their occurrence sooner in life.

The energy value of the diets eaten by Iowa women whose weight was within 10 per cent of the ideal averaged 1810 calories, whereas the diets of women more than 20 per cent above ideal weight averaged 1650. Diets providing less than 1200 calories a day

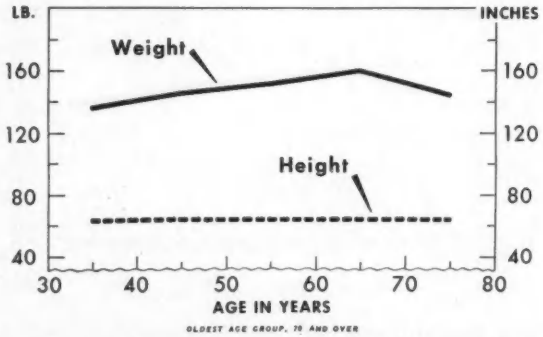

FIG. 4. *Average heights and weights of 339 South Dakota women by age decades (1949).*

were found for 184 women in the Iowa state sample. Of these 184 women, there were 53 who insisted that these low-calorie meals represented their usual eating pattern. Many complained of listlessness, irritability, nervousness, fatigability, and constant weariness. Their low-calorie diets on the average provided far less than recommended amounts of calcium and were somewhat low in protein, iron, thiamine, riboflavin, niacin, and ascorbic acid.

The large incidence of overweight in these population groups, even though many seemed to be eating diets of low energy value, is noteworthy. It is recognized that the women may tend to report less, rather than more food than was actually eaten in recalling their diets; and they may have reduced intake, consciously or unconsciously, in the cases where records were kept. Medical reports on obese subjects suggest such a possibility. However, much evidence from these studies indicates that even for those of normal or subnormal body weight, intakes tend to be less than the National Research Council allowances. The trend seems to be accountable, at least partially, to the change that has taken place in the activities in which women engage. Since the low-calorie diets were low in other nutrients as well, there seems to be a need for better dietary patterns for people whose energy requirements are markedly lower than present allowances for calories.

Other Areas of Findings

Other interesting findings from these cooperative regional studies might well be discussed, if space permitted. For example, in addition to the nitrogen balances, calcium and phosphorus balances were reported from the metabolic data on the North Central women. The authors observed a wide range of calcium intake on which women tended to establish equilibrium. Average calcium intakes were similar for all age-decades up to seventy. Average phosphorus intakes, however, declined as has already been mentioned for energy and protein.

Studies by Chaloupka and co-workers (15) in Nebraska showed an average of 13.2 gm. hemoglobin per 100 ml. blood which is almost the same as the average of 13.4 gm. for women in California.

Mean serum cholesterol values for Iowa and Nebraska women were 209 mg. per 100 ml. (16)—the average values by decades increasing to a maximum of 260 in the sixty- to sixty-nine-year group. The California women in this sixty- to sixty-nine-year decade averaged somewhat more—275 mg. per 100 ml. The serum cholesterol levels for California men were lower than for the women. In the North Central study, there seemed to be no significant relationship between serum cholesterol and body weight, basal metabolic rate, diastolic blood pressure, dietary protein, or dietary fat. In California, a positive correlation was reported between serum cholesterol and dietary cholesterol and fat. When intake of fat of

animal origin was considered, the correlation was lower.

Other reports on the San Mateo studies have covered blood glucose (17), as well as packed cell volumes, mean corpuscular hemoglobin, and sedimentation rates. Circulating and dietary concentrations were compared for ascorbic acid (18), vitamin A, and carotene (19). The authors reported that the ascorbic acid figures indicated that, as the economic level increased, the dietary intakes and the serum levels for this vitamin increased. They also observed that when people were grouped according to serum ascorbic acid levels, there was a consistently greater proportion of people without teeth and with gingivitis in the group with serum levels below 0.3 mg. per milliliter.

Many publications are still in preparation which will round out the stories from the various cooperating institutions. One publication relating to clinical aspects of the follow-up studies on the same people four years later in California has already been published (20) and further analysis of the nutritional findings has also been made (21).

Some of the practical implications of the findings and ways to improve diets without eating too many calories have been most interestingly and ably pointed out in articles from which I have already quoted which were written for the women of Iowa. Others have been released from Iowa (22–28) and one from South Dakota (29) in which nutritionists, dietitians, and others who set up food guides or diets may find helpful facts and suggestions applicable to men as well as women and to other states besides Iowa and South Dakota.

Conclusions

One outstanding conclusion from the research reported to date seems to be that many middle aged people are not keeping their body weights down to the levels which are now generally accepted as conducive to good health. There seems to be no basis for challenging the currently accepted standards for body weight, namely the weight for height at ages of twenty-five to thirty, as shown by life insurance examinations and other data. The studies reported here emphasize many disadvantages of deviating upward from these norms as one grows older yet give evidence that a distressingly large number of ordinary people in various walks of life and in several states may be seriously overweight. Even recognizing that overweight people may underestimate their intakes—or lower their intakes under observation—there is still convincing evidence that many people's diets should be lower in energy value than present dietary allowances would indicate they need.

Furthermore, people who reported very low energy intakes—and not exclusively those who were overweight or consciously trying to reduce their food intake and lose weight—were taking diets lower than the allowances for other nutrients. The fact that the average protein values of the diets were related to the total energy values, as were a number of other nutrients, indicates that on the whole these population groups ate a similar assortment of foods. Differences were mainly in quantity and not in kind of food eaten. It appears that practical ways are needed to help men and women whose energy needs may vary much more widely than their needs for other nutrients to select appropriate meals from the foods available.

The specific findings we considered here should alert us to dietetic dangers. Although knotty problems still remain which require further research, dietitians, nutritionists, doctors, and all others concerned apparently need to give more attention to the development and to the use by all sorts of people of realistic and nutritionally sound dietary recommendations on the basis of what we now know. We need the help of teachers and community leaders to insure that every available means is used in giving both men and women a better basis for all-around good nutrition and good health. All of us, as eaters, and most of us, as feeders of families or institutional households, have problems that an application of the results of research already reported can help us to solve.

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Food Facts and Figures

Latest available figures show that twelve countries have available over 3,000 calories per capita per day, according to the new 1956 issue of the *United Nations Statistical Year Book*. They are: Australia, Canada, Denmark, Finland, Iceland, Ireland, New Zealand, Norway, Sweden, Switzerland, United Kingdom, and the U. S. In addition, Belgium-Luxembourg, Netherlands, and West Germany were very close to the 3000 figure. Calories in Argentina, Austria, France, and Uruguay exceeded 2800. At the other end of the scale, there were less than 2000 calories per person daily in Burma (1947–48 figures), Ceylon, and India, and not much more in Honduras, Pakistan, and Japan.

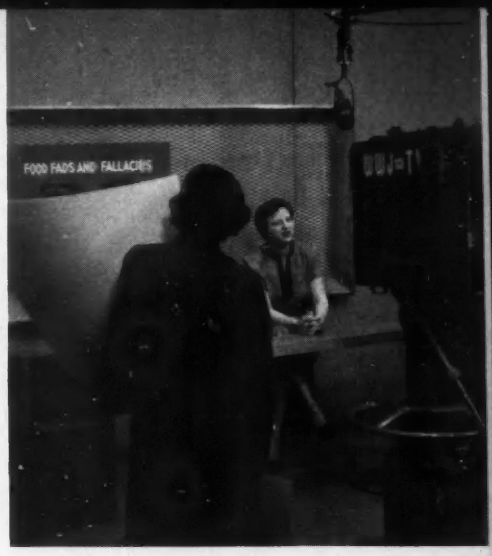
Basic composition of national diet varies widely according to national customs, climatic, and economic conditions, and levels of living, and such differences are reflected by the data. While annual per capita supplies of meat are about 100 kg. in Argentina, Australia, New Zealand, and Uruguay, and over 80 kg. in Canada and the U. S., supplies amount to only 1 kg. in India, 3 kg. in Ceylon, and Japan; 5 kg. in Pakistan, 11 kg. in Egypt and Israel, and 15 or 16 kg. in Portugal, Greece, and Turkey.

Among the low meat-consuming countries, per capita supplies of cereals (flour and milled rice equivalents) were high, reaching 170 to 200 kg. in Egypt, Pakistan, and Turkey; about 150 kg.—about double the figure for Canada and the U. S.—in Greece, Israel, and Japan; and around 130 kg. in Ceylon and India.

The percentage of total daily calories derived from foods of animal origin (meat, eggs, fish, milk, cheese, butter, and so on) amounted to around 6 per cent in Ceylon, India, and Japan; less than 10 per cent in Egypt and Turkey; less than 15 per cent in Greece, Pakistan, and Portugal; and to 16 per cent in Italy. In New Zealand, the figure was almost 50 per cent; in Australia, Canada, Finland, Sweden, the U. S., and Uruguay, 40 to 43 per cent; and close to 40 per cent in Ireland, Norway, and the United Kingdom.

Expenditures of income for food for sixteen countries indicated that food constitutes the largest private consumer outlay. In three less developed countries—Ecuador, Honduras, and Jamaica—it accounted for 49 or 50 per cent in the latest year reported, and for 46 per cent in Italy in 1955.

In seven more advanced European countries, food represented about one-third of total private consumer spending, ranging from 30 per cent in Norway and Sweden up to 34 per cent in Ireland and Luxembourg. In Austria, however, it was 37 per cent. In Australia, the U. S., and Canada—which are largely self-sufficient in food production—the percentages were 27, 22, and 22 respectively.



Educational Television—Nutrition's New Opportunity

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AT THIS very moment, thousands of American citizens of all ages are being educated or entertained through the medium of television. But there is a great difference between education by television and educational television. My suggestions will relate to educational television—more specifically to the opportunity available to us to participate in nutrition education via the medium of television.

It is difficult for us to remember when we did not have radio; children today will find it impossible to imagine life without television. It is a communication medium through which they learn much before they have learned to read. As individuals, it would be difficult for us to ferret out just what we have learned from books, radio, television, from our teachers and parents, to say nothing about the learning that comes from living in the United States in the twentieth century. Because as adults, we are continually accumulating facts and increasing our knowledge from a variety of resources and experiences, I found it difficult to define my own reactions to television as an educational medium until *I* faced the camera.

Fear and Misgivings

My challenge came in the fall of 1950. The University of Michigan aired its first Television Hour on Sunday, November 5, 1950, over WWJ-TV, Detroit. One of the first two "telecourses" was on "Living in the Later Years," and I was invited to participate in one program. We rehearsed in a makeshift basement studio; I was afraid of television and regretted having agreed to "participate." The day of the program arrived. If I could have prevented that sunrise, I think I would have, but very early on a Sunday morning the University program directors, producers, and "talent" were off for Detroit.

After four hours of final rehearsal at the studio, I must confess I was somewhat confused by the full meaning of that word, "rehearsal." Much "rehearsal" time is spent just sitting and waiting while those who "shape" the show revamp it a little or a lot. "Shaping the show" includes diverse activities such as re-adjusting the lights, moving furniture, practicing camera movements, trying different microphones, and replacing the props. All the while the "talent" tries hard to be inconspicuous, unafraid really, but extremely bewildered. Soon I realized that the "talent" had to be completely conversant with the subject matter involved and as pliable as a dish of unset gelatin in order that the directors could help the teacher to stimulate those viewers who are capable of learning into those who want to learn.

My "spot" had been planned and re-planned and rehearsed to run for 13 min.—not memorized, mark you, but so rehearsed that the subject matter and method of presentation were actually a part of me. During the actual broadcast, some of the "elder citizens" who had preceded me were so carried away with demonstrations of their hobbies that the clock seemed to race, all the while eating up *my* minutes.

Being a neophyte, I continuously tried to recalculate how many minutes I would have, at the same time, re-adjusting subject matter and when I was given my cue to go on, my calculations offered 7 min. But my arithmetic was as feeble as my knowledge of this medium, and the floor manager frantically waved a 3-min. sign. Somehow my gray cells came to my rescue, and I am told that a hint of sensible organization was apparent in this 3-min. spot. My initiation was over! Three min. were too short to get over the initial fear of that inanimate object known as a television camera with coils of cables that seemed to be the tentacles of an electronic monster. With experience, I came to realize first, that the cables are all over the floor for a reason; second, that adjustments in subject matter must be made right on the air without the suggestions, re-assurances, and frank criticism of those wonderful people, the producers and directors; and third, that fear can vanish once you are "on the air" and in close contact with those you know are at home watching the program. And, for days and weeks afterwards, one feels gratified when

[1] Presented before the Chicago Nutrition Association on December 12, 1956.

total strangers speak to you and discuss information you presented on the program. This is the hoped-for opportunity for teachers who want teaching to be more than a one-way method of communication.

My confession of fear, misgivings, and recognition of the need to be completely adjustable is made to assure you that you will not be abnormal when you fearfully face your first camera and want nothing so much as to run away from it all. Frankly, I would hesitate to have confidence in a person who did not have misgivings about the use of a new medium. Furthermore, many who make their living in the eyes of the public confess that they, too, have horrible moments just before the show goes on. Do not let your fear exaggerate itself. Do not let it detain you from accepting your first invitation to do nutrition education via television. Accept the fact that this fear will leave. Stop worrying and appreciate the unlimited opportunities that television offers us.

Gaining Experience

To return now to experiences that followed on the heels of the first 3-min. appearance before a camera. Invitations to interview other members of the faculty on the program known as "Michigan Report" put me in the strange position of assuring frightened colleagues that the experience was worth every minute of rehearsal time expected of them; that they would really enjoy it; and that the program directors would be most helpful in suggesting ways in which intricate matters of science could be presented simply, honestly, and perhaps dramatically to people they would otherwise never have the opportunity to teach. Needing to sell others, I realized I had sold myself.

My real baptism into the world of the four-lens monsters came in the spring of 1953, when I assumed responsibility for a seven-week telecourse on foods and nutrition. I had assistance from another member of the faculty on each of three shows but carried the other four alone. At that time, the University was inviting viewers to enroll in non-credit courses and receive television supplements written by the faculty members presenting the courses. The "classes" were 30 min. long, aired at that enviable hour, 1 o'clock Sunday afternoon, in Detroit over WWJ-TV.

What was the biggest hurdle? Time. I calculated that I must plan on about 24 hr. preparation for 24 min. on the air. Yes, about 1 hr. of preparation for each minute of presentation! As you all know, it is most difficult to find 24 hr. over and above the hours required to teach a full class load in a graduate school. Hence, it is understandable that faculty must be assigned television education as a part of their total teaching load, not in addition to it.

This seven-week course sold me completely on the untapped opportunities for nutrition education via television. The correspondence, the comments on the examinations, and the conversations with strangers who recognized me and discussed the subject matter presented and left with a remark such as, "I will be seeing you next Sunday," made all the effort worth while. Truly, this is an avenue of education that we cannot afford to ignore.

Filming Programs

In January of 1954, our newly remodelled television studios were ready on campus, and in the late spring —at long last—the television programs could be kinescoped. I sound enthusiastic about the acquisition of kinescope equipment (a 16 mm. sound film of the live television program), but I really was not. The first 30-min. kinescope program I did was the most difficult television experience I have had.

I had grown accustomed to the fact that on the live shows, people were listening and looking right now; I was talking with them, not dictating to a machine. The film was not alive, in my opinion. Subject matter was being "canned" for future use. Teachers thrive on the stimulation that comes from contact with students, the give and take of ideas, discussion. With live television I found that the subject matter was a one-way conversation only while the show was on the air. After that, there were wonderful opportunities to discuss the subject matter, to learn what I had not presented clearly, to determine how it might be improved another time.

The kinescopes would be sent all over the United States, and I would not likely have an opportunity to talk with people who had seen the programs. However, I have had response to their use, but it is delayed and it is by correspondence. After the second kinescope, I began to warm up to the technique for I realized that only through this procedure could a degree of permanence be achieved and universities could share their television productions. Also, kinescopes can be, and are, incorporated into general audio-visual use. Perhaps it would be easier to do kinescopes if one had not done live shows previously.

Every television experience has been valuable: assisting with educational programs on dentistry, polio, and the history of the Upper Peninsula of Michigan; three appearances with the Arlene Francis "Home Show"; and a half-hour solo performance on the "Halls of Science" on the West Coast. Just as classroom teaching varies from day to day, so do television opportunities and experiences. The challenge is always there if we have knowledge that we believe is worth sharing. Directors and producers have the skills to help us and thousands of people are willing to turn a dial to learn. What they will learn depends on whether we are willing to accept the concept that there is a world of difference between education by television and educational television.

Television Compared with Classroom Teaching

As some of you embark on a new phase of your career in nutrition education, you might consider how tele-

vision is like and unlike the teaching situation you now enjoy. Please keep in mind that these comments can relate only to my own experiences—I am not an authority on television. I have been fortunate in having had the opportunity to teach through this medium and wish that some of these concepts had been available to me before I first looked at a television camera six years ago.

First, the teacher must be a good teacher; she must be sincere with a firm belief that what she wishes to share is worth sharing. The subject matter must be honestly presented. If an illustration or an adaptation needs to be used, identify it as such; do not pretend it is the real thing. However, whenever possible, use the genuine article. Do not try to be Helen Hayes; your audience knows you are a teacher, and they do not expect you to present "The Queens." They do have a right to expect that you will present factual information, using the talents and skill of the television medium to make that subject matter come alive and be meaningful.

The teacher must have insight and sincerity, enthusiasm and knowledge; the television machine cannot make out of a teacher what he is not. Enthusiasm and effective teaching will compensate for a lack of Hollywood appearance and a particular type of glamor. Television is a sensitive medium, and the teacher will not be able to call his class back together to do a better job tomorrow.

There is no substitute for knowledge, for with knowledge comes security; if uneasiness in subject matter to be presented is bothering you, get control of that facet first. Then prepare a clear outline of the subject matter you think might be presented; indicate, wherever possible, the "props" and demonstration techniques you would like to suggest to the program director. Look at the program as a "package"; your information must be valuable if the viewer sees only this one program. It would be absurd to leave a naked, shivering baby on a bath table because timing did not permit the nurse to cover him before the program closed. It would be equally discouraging if you indicated through voice and picture that you were going to demonstrate three reasons why vegetables should be handled with care and actually cook vegetables to clarify the information, but then leave the viewer with only two-thirds of the subject matter presented. Plan your subject matter to have logical sequence; work hard on this part of the show and be prepared to rehearse.

Accept the Director's Suggestions

Then the second step takes place, assuming you have been offered the use of the time as you wish. Discuss your suggested subject matter and "prop" outline with your program director, and do be flexible if he suggests subject matter changes which provide more clarity without sacrifice of integrity of either subject matter or presentation. Now, the medium, the subject matter, and the talent must blend into a whole, and a possible plan will evolve.

Never has there been a difference in what the director and I were trying to achieve; it was simply a matter of integrating my knowledge of subject matter with his astonishing feel for what constitutes communication and effective teaching over television. We need all of the wisdom of communication skills and techniques the program director can offer. Why should we assume that effective direction can heighten the powers of actors but must compromise those of teachers? After all, subject matter can be presented in a number of ways. You and I know the subject matter, but the "number of ways" in the world of television is quite another thing. For example, time pressures and budget restrictions must be met. No one has worked so hard to challenge me to mold my ideas with clarity, economy of time, and relevance as the program directors with whom I have worked at the University of Michigan. Take their advice, be flexible, be willing to blend your ideas with theirs; the directors have a sense of pattern that must be developed in every show, and you must permit them to do just that.

I believe that the interest, patience, and skills of the producers and directors are of the greatest importance, and if we do not use them to the fullest, we will fail in our television education. Television is not just radio with a picture; it is education by using the senses of sight and sound. It combines talent and technique so that effective teachers may present great ideas and something memorable will happen.

Take advantage of all the time the director can offer you and in addition, work alone. The subject matter and the plans for presentation must be so completely familiar to you that regardless of unexpected happenings in the studio, you will find it quite possible for "the show to go on." I shall never forget having a blackboard fall on my head 5 min. after a 30-min. show had started. Do not try to hide or ignore the fact that something unexpected has happened; my audience had seen the mishap. They expected the teacher to handle the situation calmly and go on with the show. It is likely that something has fallen unexpectedly in every home in the United States, and the viewer realizes this.

Don't Attempt the Broadway Approach

A mistake that happens too frequently is that the teacher gets the erroneous idea that she must be on a "show" in the Broadway sense; the idea that all television must be entertaining in that way is a delusion.

After all, some people like to watch a serious drama while others switch the dial until a "western" comes into view. This delusion about entertainment stems from the movies or watching the many commercial telecasts. A necessity for popular appeal in the broadest sense is not to be expected in television education any more than in our choice of books.

Also, it is not to be expected that a program on the dietary needs of pre-school children will command as large an audience as an Ed Sullivan variety show. A teacher of nutrition is not likely to be expert in ballad singing, slap stick comedy, or dramatics. She is not expected to be any of these things. A nutrition teacher should be just what she is; this is talent enough for one individual in a day of academic specialization. Because you are not expected to be a professional actress, please do not plan your first program as a role-playing skit. Your audience will sense in a moment that you are out of character, that this is a staged presentation, and furthermore, that the actors are amateurs. Your ability is to teach, so teach, realizing that attention getting does not guarantee listening, let alone understanding or remembering.

The sincerity and integrity of purpose of the educator are basic to teaching. Dr. David Henry, President of the University of Illinois and a former chairman of the Joint Committee on Educational Television, speaks as an outstanding leader in education and as a proponent of all that is best in our dreams for educational television (1).

> . . . We do not need to apologize for the inherent appeal of educational programs for those who are eager to learn and who are thus to be served by them. That audience is a larger one than is commonly recognized and justifies the existence of educational broadcasting. We do not need to sugarcoat the message or encapsulate it. We do not need to talk down to the audience. Good teaching is always interesting to those who want to be taught. Let us be sure we are broadcasting good teaching to an interested audience with an educational objective—and we can forget the false stimuli, the faked format, the "souped up" tone, the implied apology.
>
> . . . There is a common ground between educational and commercial broadcasting—in the understanding of technical use of equipment and in management and administration. The differences, however, are vital and must not be obscured.
>
> There is a difference in purpose—the one entertains, the other teaches.
>
> There is the difference in technique—the one depends upon showmanship to command attention, the other upon concern of the listener to learn.
>
> There is the difference in measured achievement—the one counts ears, the other counts minds.
>
> Once the lines are clear, the professor of broadcasting can help education borrow the applicable from the commercial field—and there is much to be borrowed for the enrichment and enlivening of the teaching process; but he does not confuse cultural recreation with education, attention-getting with learning, or audience counting with educational measurement.

The Challenge

Educational television must have as its purpose education—education in the broadest and richest sense to be sure, but education and nothing else. Thousands of people want education. You do not need to apologize for providing it. But remember that the purpose must remain education or there is no educational television.

Teaching by word of mouth and by demonstration is old, as old as the spoken word. It is television that is new. Nutrition's new challenge is to bring to the American public the fascinating story of nutrition—in a setting of truth, in an atmosphere of honesty. If our challenge is to be met, we must be willing and eager to adapt our specialized knowledge to the medium of television. If we do not, we will have little reason to sit back in horror at misinformation presented in all its infamy to a public who seeks knowledge about nutrition but does not have the means of sorting the fad from the fact. We are specialists in nutrition. By working with the specialists in communication skills we *can* bring knowledge to a diversified audience we might never contact if television had not opened the air waves for us.

In conclusion, be a well informed and enthusiastic teacher. Be willing to experiment with techniques applicable to the television medium. Accept opportunities and hope that some time in the years ahead, Americans of all ages will say, "You know, I cannot remember when we did not have educational television."

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Nutritive Qualities of Azotobacter vinelandii[1]

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The bodies of the bacteria called Azotobacter, when dried, contain 75 per cent protein of good quality. Growing this organism on a commercial scale could conceivably add substantially to the world's supply of protein food

PROTEIN MALNUTRITION is recognized as a problem of great magnitude and importance over large areas of the world (1). Many of the areas affected are overpopulated and have difficulty producing sufficient food by means of the agricultural practices employed. In such areas development of other economically feasible means of providing protein of high biologic quality would be valuable. Such development might occur either on the spot by the utilization of industrial wastes, or in other countries for shipment to these areas in a concentrated form.

The cultivation of microorganisms in large quantities to supply such a need has been considered from time to time, and trials with some organisms have been undertaken; but expense or unpalatability, together with sub-optimal proportions of amino acids—particularly with respect to methionine—in the organisms investigated has discouraged their extensive use in human food. Brewers' yeast, *Torulopsis utilis*, and *Chlorella* have received the most attention in this country to date (2–4).

Relatively few species of bacteria have been explored for their food possibilities, but the data available indicate that some members of the group might meet the objections which have curtailed exploitation of the yeasts and algae. *Bacillus megaterium*, *B. subtilis* (5), and *Azotobacter vinelandii* (6) have given good yields when grown in mass culture on inexpensive media. *B. megaterium* is said to be palatable and has been shown to be nontoxic for rats when fed up to 20 per cent of the ration over a period of 400 days (7). It has a good amino acid balance and vitamin B_{12} content (8).

The special capacity of Azotobacter to grow in media containing no source of nitrogen except the air was recognized by Hunter as early as 1923 as a characteristic which recommended the investigation of this genus for its food qualities. He did some of the pioneer work on increasing yields in liquid media (9, 10) and the only previous feeding trials with the dried organisms which have been reported (11). The idea of using these organisms as food was not pursued, however, despite the success of Hunter's experiments. Somewhat later, Lee and Burris (6) showed that *A. vinelandii* could be grown in molasses media, that the nitrogen content of the organisms grown under these conditions was higher than that reported for yeasts or algae, and that riboflavin, niacin, biotin, thiamine, and pantothenic acid reached surprisingly high levels in the cells. In the mass culture trials of Alexander and Wilson (12), the nitrogen content was also high (11.64 per cent) at the time of maximum growth.

Work on the quality of the protein from a nutritional standpoint has not been reported. Omeliansky and Sieber (13), Greene (14), and Burris (15) analyzed for some of the amino acids by the chemical methods in use at those periods, but not all of those essential for human nutrition were included, and the results of the various investigators differed widely.

Method of Obtaining Organisms

Analyses for twelve amino acids constitute the major portion of the work here reported. A preliminary feeding trial with mice and an organoleptic experiment with human beings are included.

Two cultures of *Azotobacter vinelandii* were used. One was Wisconsin strain O, and one came from the stock culture collection of the North Dakota Agricultural College.[2] These were grown in "diphtheria toxin" bottles of 5-liter capacity, fitted with two-hole rubber stoppers. Bottles were connected to water suction pumps and aerated with cotton-

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[2] The authors express their appreciation to Drs. P. W. Wilson and B. P. Sleeper of the Departments of Bacteriology of the University of Wisconsin and North Dakota Agricultural College, respectively.

TABLE 1 Amino acid contents of Azotobacter vinelandii, brewers' yeast, and foods as eaten by middle class, rural people

AMINO ACID	PERCENTAGE OF PROTEIN*		
	Azotobacter	Brewers' yeast†	Middle class, rural U. S. diet‡
Arginine	6.20	4.69	5.7
Cystine	1.20	1.39 §	—
Histidine	2.15	1.62	2.3
Isoleucine	4.88	4.92	6.0
Leucine	7.17	6.74	9.0
Lysine	5.43	7.26	5.8
Methionine	1.97	1.09	4.1¶
Phenylalanine	3.43	3.71	5.5
Threonine	4.09	5.27	3.9
Tyrosine	1.68	3.87 §	—
Tryptophan	1.29	0.93	1.3
Valine	6.06	5.27	5.9

* Calculated to 16 gm. nitrogen.
† Figures of Horn, Jones, and Blum (18).
‡ Figures of Block, as quoted by Allison (22).
§ Average of values given by Block and Bolling (25).
¶ Cystine and methionine values combined.

filtered air dispersed by a porous stone diffuser. Each bottle contained 4 liters of the medium of Burk and Lineweaver (16), substituting sucrose for glucose, omitting $CaSO_4$, and adding 4 ml. of 0.5 per cent solution of $FeCl_3 \cdot 6H_2O$ and 4 ml. of 0.5 per cent solution of $MnSO_4 \cdot 4H_2O$, and 0.1 p.p.m. of Na_2MoO_4. Tap water was used. Sterilization was accomplished at 120°C. for 30 min. After two days' growth, cultures were examined microscopically for contamination and harvested (if pure) in the Sharples super-centrifuge. The resulting paste was washed once by trituration with distilled water, re-centrifuged, and the organisms killed and dried at 95°C. on watch glasses. The dried product came off in flakes and was ground through a 40-mesh sieve.

Proximate Analysis

Mean values for proximate constituents of vinelandii O, expressed as per cent of dry weight, are:

Nitrogen	—12.052 (× 6.25 = 75.32 protein) —
Fat	— 1.56
Carbohydrate	—trace
Alcohol-soluble residue	—14.17
Ash	— 6.40

Amino Acids

In addition to the eight amino acids known to be needed preformed in the human diet, cystine, tyrosine, arginine, and histidine were assayed because of their possible importance (17). The microbiologic methods of Horn, Jones, and Blum (18) were used for the nine amino acids covered by that publication. Cystine was determined by the method of Horn and Blum (19); tyrosine by the method of Barton-Wright (20); and tryptophan by the colorimetric method (21), using papain digestion.

Mean results of several analyses on both cultures are presented in Table 1, in comparison with the amino acid content of food as it is eaten by the middle class rural population of the United States—a diet which is conceded to be good by nutritional standards (from Block, as quoted by Allison [22]). Values for brewers' yeast are also included since probably it is nutritionally the most adequate of the microorganisms which have had any extensive use as food in this country, to date. *Torulopsis utilis* and *Chlorella* have lower methionine contents (23, 24).

The figures in the table indicate an amino acid balance in Azotobacter which compares favorably with those found in brewers' yeast and in foods as they are commonly eaten. If the figures on the rural diet are considered as a standard, then leucine, isoleucine, phenylalanine, and the methionine-cystine combination are slightly low in both microorganisms, and tryptophan and valine can be added to the list for yeast. It is doubtful, however, whether these variations from what is commonly eaten would be significant for most of the amino acids listed. Until proportions for an "ideal" protein have been established, the question cannot be settled.

Such feeding trials as have been carried out with yeast have indicated the methionine, or combined methionine and cystine, deficiency to be most important (26–28). To be sure, untoward effects from yeast have occurred when it has been fed as the sole source of dietary protein. It is not recommended that any microorganism be eaten as the sole source of protein, nor is this likely to happen except under experimental conditions. Present evidence indicates that when proteins deficient in one or more amino acids are fed in conjunction with others which correct the deficiency, a supplementary effect occurs which is beneficial rather than harmful. What gives the problem importance, however, is the fact that it is not known what kind of amino acid balances exist in the poor proteins eaten by the people, particularly children, of the areas where protein malnutrition occurs. Even in this country, diets may under some conditions barely meet what is considered a desirable methionine content (29). For purposes of supplementation of already poor proteins (as contrasted with the well balanced proteins supplied in experiments which have corrected the deficiencies of yeast), it would be well to supply the best protein available. Whether Azotobacter is superior in this respect to other microorganisms which are capable of being mass produced remains to be determined. Feeding experiments to investigate this point are contemplated.

Feeding Trials with Mice

To rule out gross toxicity, preparatory to our trial of taste acceptability, the dried organisms were

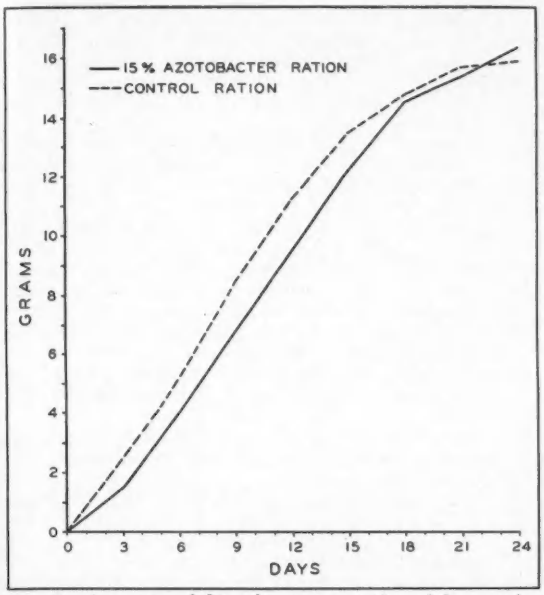

FIG. 1. *Average weight gain on two rations (eleven mice on each ration).*

incorporated in the diet of young mice. The animals were then watched for signs of illness and weighed to chart their growth as an indication of their state of health.

The experiment was conducted in two parts. Mice were twenty-four days old at the outset for both parts. The rations were the same also—ground Purina laboratory chow for the control group, and the Purina chow with Azotobacter incorporated at a level of 15 per cent by weight for the experimental group. In the first part, figures are based on only six animals—three experimental and three control, and the feeding period lasted only eighteen days. In the second trial, there were eight animals in each group, and the experiment lasted twenty-four days. All animals were weighed every three days, but a record of food consumed was kept only in the second part of the experiment.

Figure 1, depicting gains in weight, is composited from the data in both parts of the experiment and therefore represents mean values for all eleven animals on each diet through eighteen days, but for only eight of them through the remaining six days. Mean weights at the outset were 10.53 gm. for those fed the Azotobacter ration and 10.39 gm. for the controls. At the close, they were 26.88 gm. for the Azotobacter group and 26.31 gm. for controls. Total weight gains were thus approximately equal on both rations, and this is readily apparent from the figure. The slower increment in the initial three-day period for the experimental animals can probably be explained by the fact that these animals were eating less during this period—an average of 4.16 gm. ration per mouse per day, as compared with 6.29 gm. for the controls. After three days, their food intake was equal to that of the controls; and the slopes of the two growth curves came to be approximately parallel.

TABLE 2 Range in weight coefficients of organs of mice on two rations (three animals for each ration)

ORGAN	WEIGHT COEFFICIENTS	
	Mice fed Azotobacter	Mice fed control diet
Liver	0.0770–0.0894	0.0841–0.902
Kidney	0.0200–0.0223	0.0192–0.023
Spleen	0.0033–0.0063	0.0030–0.007

Signs of illness in experimental and control groups were equal. A few of the animals died or were killed, and autopsies were performed. There was evidence of pneumonia in some animals, and in one of the controls there was a generalized infection manifest by small abscesses scattered throughout the tissues. Direct smears and cultures yielded a pleomorphic, Gram-positive organism, and the infection was presumed to be pseudo-tuberculosis. Two other animals in each group presented a bloated appearance, and at autopsy were found to have grossly inflated intestines. (This was not post-mortem change, for the animals were killed and autopsied at once.) Cultures for Salmonella were negative. Thus, while unexplained illnesses did occur in the animals, their equal distribution between the groups on the two kinds of diets ruled out the Azotobacter as an etiologic factor. The weights of the sick animals were not included in the composites from which the chart was drawn.

As a further check on possible abnormalities, livers, kidneys, and spleens of the first lot animals were weighed at the close of the experiment. These weights are given in Table 2, expressed as a coefficient derived by dividing the weight of the organ by the weight of the animal. This procedure was followed because the animals varied so greatly in size, and weights of the organs by themselves would not reveal abnormality if present.

Since Table 2 shows that the upper limits of the ranges of the coefficients for the experimental animals fell entirely within the limits set by the control animals, it may be concluded that the experimental ration did not induce enlargement of liver, kidney, or spleen.

With the second lot of animals—those which were carried through twenty-four days of feeding—organs were not weighed. Gross enlargement of the spleen was evident in one control and two experimental animals. No other gross abnormalities were noted at autopsy, except some residual consolidation of the lungs from earlier pneumonia.

It is concluded from the foregoing evidence that *Azotobacter vinelandii* exerts no gross toxic effect on mice when ingested at 15 per cent of a mixed ration.

Trial for Acceptability

We believe that if future work on Azotobacter substantiates its value as a potential food, it will probably be eaten as a supplement to some grain product. In this preliminary test of its acceptability, the powder was, therefore, incorporated in white flour, this being the grain product used most widely in this country. The level investigated was 2 per cent by weight of the flour. This raises the protein content of the flour by 10 per cent and the lysine content by almost a third. Baking powder biscuits were baked with this flour—unmodified flour being used in a control batch.[3]

The Azotobacter lent a slightly brown caste to the finished product. Therefore, the taste panel of eight judges—five women and three men—was blindfolded. Four received the control biscuit to taste first, followed by the experimental variety. With the other four, the procedure was reversed. All indicated a preference for Biscuit A—the first one they had tasted. All said they would also eat the other variety if served to them. Since Biscuit A was the Azotobacter variety for half of the judges, and the control variety for the other half, it was concluded that the Azotobacter taste at this level was undetectable, or in any case, acceptable.

Summary

Azotobacter vinelandii grown in a sucrose-salts medium contains about 12 per cent nitrogen on a dry basis. Methionine content is higher than that of any microorganisms hitherto investigated as possible food sources. The other essential amino acids are present in proportions similar to those in brewers' yeast, with lysine and threonine somewhat lower.

Young mice showed normal gains in weight on a ration containing 15 per cent dried Azotobacter added to a complete laboratory chow, as compared with animals fed the laboratory chow alone.

When incorporated into white flour at a level of 2 per cent, the dried powder imparted no objectionable flavor to baking powder biscuits. These biscuits showed a slight light brown color, however, which might be less acceptable then the usual whiteness.

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[3] The authors are indebted to Betsy Stark for baking the biscuits.

Consumption of Milk as a Beverage[1]

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A KNOWLEDGE of food practices and preferences of groups of the population is essential for the nutritionist and dietitian who is interested in working with individuals and families. It is also helpful to the home economist so that her teaching may be adjusted to the needs of the groups with which she works. The following study was undertaken to determine the extent of daily milk drinking and the kind of milk preferred by school children and adults in the South. Alabama was the state chosen for the study.

Procedure

Two simple schedules were prepared, one for children and one for adults. These questionnaires were answered by children in the fifth through the twelfth grades in eighteen schools (two cities and two counties) and by adults in college, professional organizations, Parent Teachers Associations, home demonstration clubs (six counties), and by parents of the children in the fifth and sixth grades of the elementary schools included in this study.

Results and Discussion

CHILDREN'S MILK-DRINKING HABITS

A total of 6070 forms were returned; of these, 510 were rejected because they were incomplete or gave contradictory answers. The number of completed forms for boys and girls in each grade is shown in Table 1 and is seen to be fairly comparable for each grade. Of the total replies, 47 per cent were from boys and 53 per cent from girls.

The boys drank more milk than the girls (Table 1). The average milk intake for all boys was 3.2 glasses and for all girls, 2.5 glasses. Approximately 42 per cent of all boys drank 4 or more glasses of milk a day, 70 per cent drank 3 or more; and 89 per cent 2 or more glasses. However, only 21 per cent of the girls drank 4 or more glasses, 50 per cent 3 or more, and 76 per cent 2 or more glasses a day. Twice as many girls (7 per cent) as boys (3 per cent) did not drink any milk.

The difference in the amount of milk consumed by the boys in the different grades was comparatively small, but less milk was consumed by the girls in the higher grades (Table 1). The average milk intake of the girls in Grade 5 was about 3 glasses, while in Grade 12 it was only 2 glasses. In Grade 5, 3 per cent of the girls drank no milk; in Grade 12, 14 per cent drank no milk.

TABLE 1 **Glasses of milk drunk daily by school children**

GRADE	NUMBER OF QUESTIONNAIRES	AVERAGE GLASSES MILK PER DAY	PERCENTAGE OF CHILDREN DRINKING						
			No milk	1 glass	2 glasses	3 glasses	4 glasses	5 glasses	6 glasses and over
Boys									
5	334	3.3	3	8	15	26	25	19	4
6	409	3.3	2	5	20	31	24	14	4
7	373	3.2	4	9	18	29	22	15	3
8	321	3.5	2	8	17	26	21	18	8
9	362	3.2	4	10	17	26	24	14	5
10	362	3.1	4	10	21	28	18	14	5
11	250	3.2	3	9	22	28	21	10	7
12	213	3.3	5	7	19	22	23	17	7
All....	2624	3.2	3	8	19	28	22	15	5
Girls									
5	369	3.1	3	10	16	30	25	15	1
6	361	2.8	2	10	26	33	21	7	<1
7	419	2.8	3	13	22	32	23	6	1
8	377	2.6	4	15	26	31	16	7	<1
9	402	2.1	9	25	26	27	11	2	0
10	407	2.3	8	18	31	28	10	4	<1
11	305	2.2	14	18	27	29	6	4	2
12	296	2.0	14	19	37	18	10	2	0
All....	2936	2.5	7	16	26	29	15	6	<1

[1] Received for publication July 24, 1956.

Difference in milk-drinking habits between adolescent boys and girls has also been reported in studies carried out in other sections of the country. A survey carried out in California (1) showed that the average milk intake for boys thirteen to twenty years of age was 5.1 qt. a week, while for girls of this same age group, the average intake was 3.5 qt. In Montana (2), it was found that consumption of milk and milk products for fifteen-year-old boys averaged 14.18 lb., but for the girls, only 8.01 lb. In rural areas of South Carolina (3), a study showed that girls thirteen to twenty years of age drank less milk than boys of this same age group. In a nutrition survey of New York State public school children (4), it was reported that the adolescent girls had the smallest milk intake of the children surveyed.

All children in the present study were enrolled in schools which served milk with the school lunch. Approximately 70 per cent of all the children drank one glass and 8 per cent two glasses of milk at school. During the school week, approximately one-third of the total milk consumed by these children was taken at school. Seven per cent of all the children drank milk at school and none at home; 16 per cent drank milk at home and none at school.

CONSUMPTION BY ADULTS

A total of 4505 questionnaires were answered by adults; 557 of these were rejected because they were incomplete or contained contradictory answers. Of the 3948 questionnaires studied, 45 per cent were received from men and 55 per cent from women. The number of questionnaires from the men and women, classified by residence, occupation, and age is shown in Table 2.

The men drank more milk than women; 3 per cent of the men and 6 per cent of the women drank no milk; 29 per cent of the men and 34 per cent of the women drank milk sometimes; 17 per cent of the men and 13 per cent of the women drank milk most of the time; and 51 per cent of the men and 47 per cent of the women drank milk every day (Table 2). The mean intake for the men who reported drinking milk every day was 3.4 glasses and for the women 2 glasses.

A national survey (5) of the use of dairy products, carried out in the spring of 1955, showed that 51.2 per cent of the men and 46.9 per cent of the women drank milk every day. These figures are similar to those found in the present study. Surveys carried out in California (1), New York State (6), and South Carolina (3) also showed that men drank more milk than women.

There were no marked differences in milk-drinking habits that could be attributed to size of community or city. No information was obtained on availability of home-produced milk, which has been shown to influence the milk drinking habits of men and women in rural areas (3).

When considered from the point of view of occu-

TABLE 2 **Adult consumption of milk classified by residence, occupation, and age**

CLASSIFICATION	NUMBER OF QUESTIONNAIRES		DRINK MILK							
			Never		Sometimes		Most of the time		Every day	
	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
All Subjects										
			%	%	%	%	%	%	%	%
Total group	1795	2153	3	6	29	34	17	13	51	47
Size of Community										
Rural	251	562	4	7	34	33	14	14	48	46
Less than 5,000	200	317	2	8	25	37	20	13	53	42
5,000–20,000	188	279	2	5	30	37	16	14	52	44
20,000–50,000	380	340	2	5	26	31	19	11	53	53
50,000–100,000	723	586	3	6	30	34	18	14	49	46
Over 100,000	53	69	4	3	28	32	17	10	51	55
Occupation										
Business	393	164	2	7	31	39	16	15	51	39
Industry	604	32	2	6	30	44	19	16	49	34
Homemaker	—	1201	—	7	—	40	—	12	—	41
Student	260	363	3	5	26	21	16	14	55	60
Teacher	51	127	—	6	25	21	18	11	57	62
Other	487	266	4	5	29	26	17	17	50	52
Age										
Under 20 years	111	193	4	3	22	25	17	15	57	57
20–30 years	657	465	1	6	29	29	20	12	50	53
31–40 years	591	883	3	6	32	40	16	14	49	40
Over 40 years	436	612	4	7	29	32	15	12	52	49

pation, it was learned that both men and women students and teachers drank more milk (Table 2) than those in business, industry, or the women who are homemakers. The least milk was consumed by women in business and industry and by the homemakers. Similar findings have been reported by Dean (7) who found that diets of industrial women in Virginia were low in "the milk, cheese, and ice cream" group when compared with the Basic 7. Also, a study on the nutritive content of meals of homemakers in four cities (8) showed that the meals were lower in calcium than in other nutrients thus indicating low consumption of milk.

Milk consumption according to age (Table 2) showed a gradual decline from the under-twenty age group through the thirty-one to forty age group. The percentage of both men and women, but particularly the women, drinking milk every day in the over-forty age group was somewhat higher than in the thirty-one to forty age group. A report of differences in milk drinking habits by age, but without respect to sex, in a national survey (9) showed that in the fifteen to twenty-five age group, 71.8 per cent of the population drank plain milk every day. During the next three decades, the percentages were 55.0, 42.8, and 36.2 per cent respectively, and in the fifty-five-year-and-over group, the percentage was 40.6. In California (1), milk consumption by younger adults was also greater than by older persons.

REASONS FOR NOT DRINKING MILK

Dislike of milk was the main reason given for not drinking it (Table 3). A greater percentage of girls in the high school grades showed a dislike for milk than other age groups. Approximately 6 per cent of the girls in the fifth grade checked a dislike for milk, 18 per cent in the ninth grade, and 24 per cent in the twelfth grade. Five per cent of the boys recorded a dislike for milk with a range of only 3 to 7 per cent between grades. Approximately 4 per cent of the men and 10 per cent of the women checked a dislike for milk. A relatively small proportion (2 per cent of the boys, 4 per cent of the men, 1 per cent of the girls, and 3 per cent of the women) did not drink milk because they said it was not available.

No attempt was made to obtain information on relation of income to milk consumption. A proportionately higher number of women than any other group reported that they believed milk to be fattening, thus indicating the need for nutrition education.

TABLE 3 Number of replies to reason for not drinking milk

REASONS FOR NOT DRINKING MILK	BOYS	MEN	GIRLS	WOMEN
Dislike milk	123	71	396	214
Not available	61	77	30	61
Fattening	18	21	37	74
Disagrees	2	19	11	61
Other	—	66	—	81

KIND OF MILK PREFERRED

Sweet milk is the term commonly used in the South for pasteurized whole milk to distinguish it from buttermilk. The highest preference was for sweet milk in all groups.

The preference for sweet milk increased up to the twelfth grade for boys and decreased markedly for chocolate milk. The same trend was shown by the girls, but to a lesser degree (*Fig.* 1). Buttermilk had a low preference among both boys and girls.

There was a marked drop in preference of sweet milk by both men and women in the thirty-one to forty age group and an increase in the preference for buttermilk by both sexes in the upper age groups. More women than men preferred skim milk, and this preference increased with age.

Summary

A study of 5560 questionnaires from school children in Alabama showed that the average milk intake per day for the boys was 3.2 glasses and for the girls 2.5 glasses. Three per cent of the boys and 7 per cent of the girls drank no milk. There was a difference in amount of milk consumed among the girls by school grade, less milk being consumed in the higher grades.

The data from 3948 questionnaires from adults showed that 3 per cent of the men and 6 per cent of the women drank no milk, 29 per cent of the men and 34 per cent of the women drank milk sometimes,

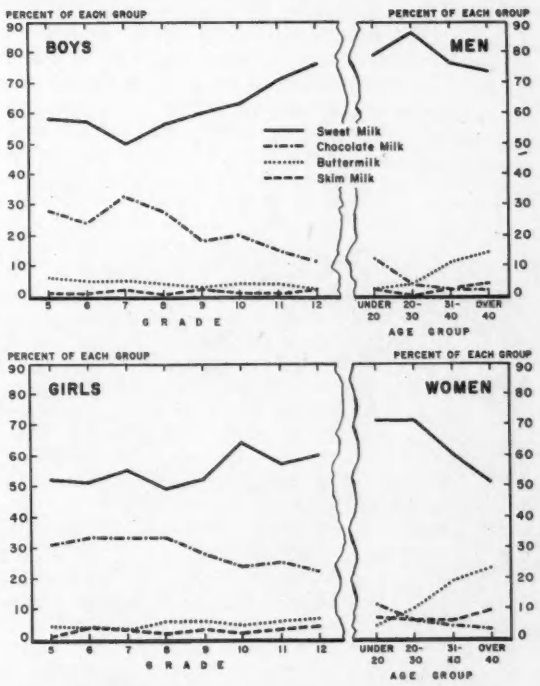

Fig. 1. Percentage of each group preferring different kinds of milk.

18 per cent of the men and 13 per cent of the women drank milk most of the time, and 51 per cent of the men and 47 per cent of the women drank milk every day.

A greater percentage of girls and women than boys and men expressed a dislike for milk. There was a decrease in preference for chocolate milk and increase in preference for sweet milk with advancing grade among the children. The adults in the older age groups expressed an increased preference for buttermilk and decreased choice for sweet milk.

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Misleading Advertising of Phenylpropanolamine Hydrochloride

With the release by the government of phenylpropanolamine hydrochloride for sale without prescription, a number of firms are promoting this drug as a "no-diet wonder drug for reducing." The National Better Business Bureau, Inc., in its March *Service Bulletin*, has issued a warning against the misleading advertising done to promote sales of phenylpropanolamine hydrochloride and its indiscriminate use for reducing purposes. It cites examples of advertising distortion in referring to scientific reports and published papers.

The products advertised for reducing purposes, the Bureau points out, usually contain 25 mg. tablets of phenylpropanolamine hydrochloride, the recommended dosage being one tablet before each meal or a total of 75 mg. daily. This is the maximum dosage permitted by the Food and Drug Administration for non-prescription sales.

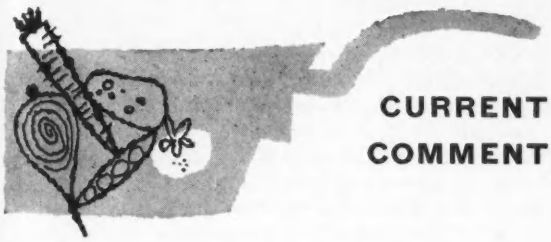
In 1956 edition of *New and Non-Official Remedies*, sponsored by the American Medical Association, the drug is recognized as an adjunct for controlling appetite in dietary management. However, this publication states: "To depress appetite in obesity, 50 mg. two or three times daily before meals for adults." Thus, the recommended dosage for use in reducing is a total of 100 to 150 mg. daily, or from one-third to 100 per cent more than the maximum daily dosage permitted for over-the-counter sale. The A.M.A. has advised: "We doubt that a 25-mg. dosage taken three times daily would exercise an appetite depressant effect of any practical significance for the majority of obese users." In this, the FDA concurred.

In reviewing the advertising on this drug, the National Better Business Bureau has found promises that these products could keep a person's weight exactly as he wished for the rest of his life. However, one physician who has published a study of the drug's appetite depressant qualities, advised the Bureau that after a few days or a week, the anorexic effect is lost. The A.M.A. has also advised, "Tolerance to any possible anorexigenic effect of this drug would in all probability, be experienced after a short period of taking it."

Furthermore, because phenylpropanolamine hydrochloride may not be safe for all persons, the FDA requires any product containing this drug to carry a statement on the label to the effect: "Caution: Individuals with high blood pressure, heart disease, diabetes, or thyroid disease should use only as directed by a physician. Do not exceed recommended dosage." Nevertheless, some advertising has assured users they will suffer no side effects.

Some of the advertising reviewed would lead readers to believe that doctors generally avoid dietary plans when treating obese patients and instead rely on drugs to depress the appetite, thus automatically reducing the food intake. This, of course, is contrary to the belief of medical authorities who feel that appropriate dietary restriction, while maintaining an adequate intake of necessary vitamins and minerals, is the basis of reducing programs generally, with drugs prescribed in selected cases as a "crutch."

Thus the Bureau believes that dissemination of advertising which deceptively leads overweight persons to believe they can permanently resolve this problem by taking a "wonder" pill before each meal, with no concern whatever about altering their dietary patterns, is a gross disservice to the public. The National Better Business Bureau, therefore, recommends that advertising media determine the ingredients of any product for which "no diet" or "wonder drug" copy is submitted and check on the authenticity of claims and the safety of the product prior to acceptance.



CURRENT COMMENT

Century-Old Dietary Taboos in 20th Century Japan

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FROM RELIGIOUS superstition and bitter ancestral experiences with the "eating together" of various foods, certain taboos among the Japanese people have evolved which are still observed today. Strict adherence to the sequence of food items in a menu and the combinations of foods served as a precaution against food poisoning, acute stomach aches, indigestion, and diarrhea are as common today as centuries ago.

To the Japanese there are certain national delicacies which in combination are non-compatible. Limited availability of adequate refrigeration and emotional factors might be the basis for some of these beliefs. A list of gastronomical antagonists should include such items as not eating eels or gingko nuts with pickled plums (*umeboshi*); batter-fried shrimp (*tempura*) with watermelon; crabmeat with iced drinking water; octopus with sesame seeds or persimmons; loquats with red beans (*asuki*) or vermicelli (*somen*); beef with spinach; fresh plums with sugar; mackerel or maize with clams. There are a variety of other food combinations which are thought to lead to harmful results because they possess certain "intrinsic" qualities (not defined physiologically). For instance, the Japanese do not combine two fish or shellfish of salt-water origin in the same meal or serve together naturally sweet foods, such as sweet potatoes or corn, with broiled or boiled fish.

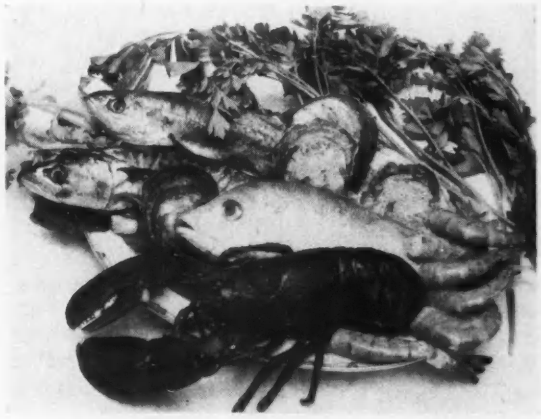
The physiologic and psychologic reasons for separating in menu planning certain foods of high nutritional value in the diet of a nationally underfed nation have been lost over the centuries. Nevertheless, the taboos themselves persist and are respected. Food combinations illustrative of this concept embrace the following groups: omission of globefish with greens, muskmelon with fried soybean curd (*aborakge*), mushrooms or milk products with shellfish, rabbit with fresh ginger, chicken eggs with garlic, and oranges with clams or shrimp.

Religious Restrictions

While these examples highlight some of the folklore about menu planning and food preparation, it is wise to pass on to the part that religion plays in determining the food habits of the 84 million people living on four little islands that comprise the country we call Japan.

As elsewhere, the great religions impose dietary restrictions. The Buddhists are mainly strict vegetarians, eating only cooked vegetables on fast days, though a few sects are beginning to permit the eating of fish, but no other products of animal origin. The Shintoists, who comprise the second largest religious group in Japan, may eat both meat and fish products of all types. For the Japanese who is both a Buddhist and a Shintoist, however, various modifications of the mother faith are practiced. On one or more of the numerous national or family festival days, high honor is paid to ancient deities by the individual family or locality observing certain general food abstinences. Notable among the foods omitted are: cereals, such as rice, wheat, maize; seafoods, such as salmon, octopus, abalone; domestic fowl, including

Japanese farm produce—note the size of the radishes in the rear



The Sea of Japan's rich bounty provides sea food the year round

Ingredients for sukiyaki—the dish the Japanese call "the friendship dish," because of its popularity with foreigners

eggs; and meat, such as beef, rabbit, and lamb. Family conformity to the wishes of the deity is exemplified by the family with the common surname of Miya (as common as Smith in our own country), members of which do not catch or eat salmon because an ancient deity landed on the island in a boat made of salmon skin.

The food restrictions are also imposed by religion for specific localities and festival days. For instance, the Tokaoko villagers do not eat abalone (*awabi*)—a divine article of conveyance—while the Kari populace does not eat octopus because, back in mythology, an ancient God was rescued from plunderers by this creature of the Sea of Japan. In deference for the local five-century-old "Salmon Shrine," the entire prefecture (state) of Fukuoka does not catch or eat salmon, though it is so plentiful that it can be picked out of the streams with the bare hands. On July 14, the Gotsu villagers do not eat cucumbers, though the best cucumbers (served as pickled *kyuri*) are reputed to be grown here. On January 1 (*Ganjitsu*—the Japanese equivalent of Christmas), many families forego the New Year's treat and ceremony of rice cakes (*mochi*) parboiled with vegetables (*zoni*) in conformity to the wishes of a deity who, in the seventh century, spared them the ravages of storms in the mountains and plague of badgers in the fields.

Seasonal and Agrarian Influences

Menu planning and food service are also influenced by agrarian and seasonal factors in many sections of modern Japan. In the beautiful religious center of Kyoto, the cultivation of maize, pumpkin, horsebeans, and ginger is restricted. However, in some instances non-cultivation does not mean non-consumption of these or similar dietary items.

It is timely to mention the influence of seasonal factors on food habits such as the beginning of hot weather which is heralded by the serving of eel, particularly grilled eel, and the annual serving of boiled carp on May 5, the celebration of Boy's Day (*Shobunosekku*—a day honoring all boys of the family but especially the first son). Carp consumption is expected to provide physical strength, endurance, courage, and great wisdom. Weird as it may sound, the superstitious belief still prevails that a pregnant woman is certain to give birth to a harelipped baby if she eats rabbit.

Sequence of Food Service

The sequence of menu items is of grave concern to the average Japanese of every economic and religious group. Great emphasis is put upon good digestion by suitable food combinations eaten in proper sequence at each meal. Appreciation of these aspects is demonstrated to the host by the very loud "sucking" and "smacking" noises uttered repetitiously during the meal and the terminal "belching"—signifying excellent choice and preparation.

Traditionally, a hot, mild, unsweetened green tea is served to children and adults alike to prepare the stomach for the meal that is to ensue, though the modern Japanese man prefers beer in summer and hot rice wine (*saki*) in winter. The Japanese woman of refinement never drinks beer or wine until she becomes a grandmother (*obasan*), when one glass is permitted, perhaps. The primary "delicacy"—there is always one—follows the tea course. This may be mulberry, cherry, or lotus leaf-wrapped soy or red bean cake (*yokan*) flavored with bamboo, an ornately decorated rice or potato cake or a raw fish (*sashimi*) and radish relish (*komono*). The main entrée, which is most frequently a boiled fish or omelet, is individually served next in sequence with a garnishment of artistically sculptured vegetables in season and the appropriate soy sauce. The plain steamed rice and herb relish course, only, follows the main entrée. Note that they are never combined as are meat and potatoes or fowl and rice in our country. This hearty repast is frequently followed by an assorted fruits-in-season tray, for, according to the Japanese, organic acids of fruit aid good digestion and prevent tooth decay. The final course always consists of a broth-base soup (*shirumiso*) made from fish which may contain either a single or an assortment of standard soup ingredients. This course is served last for two reasons: first, to allay the intoxicating effects of either beer or rice wine, and second, to signify the end of the meal.

Daily Meal Plan

An ordinary meal plan for the laborer, making the equivalent of $26 per month, might be somewhat as follows:

Breakfast: Eggs or preserved fish; shellfish or seaweed in soy sauce; rice; soup; and coarse green Japanese tea.

Luncheon: Cold steamed rice; broiled or roasted fish, or dressed vegetables; and coarse Japanese tea.

Dinner: Broiled or grilled fish or meat; grated pickled radish; boiled vegetable; fruit in season; clear soup; and green tea. Of course, rice is eaten with any of the first three items or as a separate course prior to fruit.

Foreign Influences

You are wondering what, if any, effect the ten-year occupation of Japan by the United States Armed Forces has had on the food habits of the Japanese. The effects of the occupation have been only superficial and rather limited. The century-old concept "that the Japanese people prefer fish, shellfish, and other marine life to meats of all types" is essentially true today. The main changes in food habits are in the areas of increased milk consumption (imported evaporated milk), increased use of red meat as beef, greater wheat consumption, more use of thiamine-enriched rice (containing the germ layer), and a marked increase in sugar consumption.

At present sugar is consumed mainly as hot or cold sugar-water, soft drinks flavored with synthetic fruit flavorings, candy, chewing gum for children, sweet, wheat rolls and bread, and bean-base cookies—all items to provide satiety value for the Japanese sweet-tooth. A gift of a box of imported chocolates is a treat to be indulged only on very significant occasions.

It is noteworthy to remark on how very transitory the French and American influences have been in the main. In the days immediately following the signing of the Japanese Peace Treaty, all Japanese restaurant food bore the marked influence of the French cuisine in the use of sauces and herbs and of the American deference for frying. These have all but disappeared now. Incidentally sukiyaki (sautéed beef and vegetables with soy sauce) is as Japanese as chop suey is Chinese. Both are American in origin.

Development of Dietetics in Brazil

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NEARLY TWENTY years ago, the first attempts to improve the nutritional knowledge of Brazilians through professional education were begun with the formation of a training course for dietitians in Sao Paulo at the Secretariat of Agriculture and Education. Dr. Pompeu do Amaral was the organizer of this course, in 1938, and he still continues as its director. The curriculum was of two years duration.

Soon thereafter, Dr. Paula Souza started a second, one-year course of training for dietitians at the Institute of Hygiene in Sao Paulo. It, too, continues and is now the Hygiene Faculty of the University of Sao Paulo.

SAPS Courses

Just a year later in 1939 in Rio de Janeiro, the Central Nutrition Service for industrial workers was founded. This organization sponsored a one-year course for what we call "nutrition visitors." (In the United States, the comparable person would perhaps be the community nutritionist.) In 1940, this local organization was extended to reach all industrial workers in the entire country and took the name of Nutrition Service of the Social Providence (SAPS). The former program of education was continued and intensified under Dr. Alexandre Moscoso, the first director of the new organization.

At the same time, the National Institute of Nutrition in Buenos Aires, Argentina (founded in 1933 by Professor Pedro Escudero (1)) offered to our government scholarships for university-level education for dietitians and medical doctors who wanted to specialize in nutrition. Two physicians and two graduate nurses (one of them myself) were sent to take the course offered. After graduation and on return to Brazil, we collaborated in the teaching programs for new courses opened in Rio de Janeiro by SAPS.

Dr. Dante Costa, Head of the Education Division of the SAPS, was organizing a course for "Nutrition Auxiliares" with the help of the Brazilian-American Joint Commission (one of the last war assistance organizations. A group of forty carefully selected teachers from all over the country took the one-year course, then returning to work in the various SAPS state branches. The course was successful and the following year was lengthened to two years. Later, it became a three-year course.

For admission today, an applicant must either present a high school certificate and pass an entrance examination, or have a certificate from a nursing school, or a scientific or classic course. The curriculum includes:

First year: anatomy, physiology and human pathology; physiology of nutrition; dietetics; chemistry; hygiene; and basic cooking and home economics.

Second year: bromatology (the scientific study of food, including chemical composition, food conservation); food technology; dietetics for children; applied economics; applied psychology; dietetic techniques; and advanced cookery and applied domestic economy.

Third year: organization and administration of public feeding services (large scale catering and supervision) for industrial plants, institutions for care and feeding of children, and hospital dietary departments.

SAPS offers student grants, and the graduates of this course are immediately employed by the organization. We have had students from Bolivia, Paraguay, and Colombia, in addition to Brazilians. Up to 1955, a total of 128 dietitians had been graduated from this course.

In addition to the three-year training for dietitians, SAPS also offers a one-year course in dietology for medical doctors and had graduated about ninety doctors up to 1955.

Other Courses in Rio de Janeiro

Another course of interest is that designed to prepare "Dietitians Auxiliare" of the Social Institute of the Municipality in Rio de Janeiro. Founded by Dr. J. J. Barbosa in 1944, in much the same way as was the SAPS course as a one-year training, it, too, has been extended first to two years, and now to three. The only difference between it and the SAPS course is that the curriculum includes social service and ethics rather than applied psychology. Up to 1955, eighty-five dietitians had completed this course.

The fifth educational course in Brazil for dietitians is under the auspices of the University of Brazil. The former "Coordination of Economic Mobilization" in 1944 became the "National Technical Service of Nutrition." It was later rechristened the "Institute of Food Technology," and finally became the "Nutrition Institute," which belongs to the University of Brazil by a governmental decree made in January 1946. Dr. Josue de Castro has been the Director of the Institute since its beginning. In 1947, he invited Dr. Rubens Siqueira to organize high-level courses for medical doctors and dietitians and to organize a Research and Survey Division of the Institute. Thus, in 1948, registration for the first course at the University of Brazil was opened. Requirements for admission and the curriculum are similar to those described for SAPS. This school had graduated, up to 1955, 50 doctors and 274 dietitians. In 1951, the Nutrition Institute offered a postgraduate course for dietitians.

Courses Outside of Rio and S. Paulo

Lately, two other high-level schools have been created: one at the University of Bahia (Bahia State), another at the Miguel Ozorio de Almeida Institute (Pernambuco State).

There are, in addition, five short courses: one in dietetics for children at the National Child Department, and four for nutrition visitors at branches of SAPS in the capitals of the states of Minas Gerais, Rio Grande do Sul, Ceará, and one in the federal district of Rio de Janeiro. Another is going to open in the state of Paraná.

Nutritionists' Organizations

As the training facilities for dietitians and nutritionists were developing, a need for organization was felt, and on August 31, 1949, in Rio de Janeiro, the Brazilian Nutritionists Association was founded by Firmina Santana, which admits to membership only dietitians of the high-level courses. (I was elected a member of the Technical Council of the Association.) At present, we have 420 members. We are still trying to have a standard curriculum approved by the Board of Education, because there are some divergencies among the various schools.

There is also the Paulista Dietitians Association, to which dietitians of the state of Sao Paulo belong.

Work of Brazilian Dietitians

As the years have gone by, more and more opportunities for professional dietitians have opened up in Brazil. They are now employed in such capacities as: hospital dietitians; supervisors in industrial restaurants; and school lunch program supervisors. Public health nutritionists are found in: the Ministry of Education; Nutrition Division, Ministry of Agriculture; Public Health Special Service; and National Child Department. Some conduct nutritional surveys. Our members serve as professors and lecturers in the various educational courses for dietitians, nurses, social assistants, and home economics students. They also do research and commercial work.

Salary levels for dietitians are equivalent to those for graduate nurses and social assistants, varying from Cr$5,600–Cr$11,000 ($88–$175 U.S.) monthly, plus bonuses for lecturing or administrative duties which can double the basic salary.

An Australian Dietitian Looks at American Hospital Food Service

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IN TRAVELING across the U.S. as an Australian dietitian observing hospital kitchen layouts and food services, several important points have become obvious to me. To make these points clear I think it is best to list first the points of similarity between most of the hospitals I have seen; second, the points which were unusual; and third, the possibility or advisability of using some of your methods in Australia.

Before doing that, let me point out that at home,

99% of your patients will say...

"Meritene® WHOLE PROTEIN SUPPLEMENT tastes good!"

(as good as ice cream!)

Why so much emphasis on taste? Because, simply stated, there is no value in any nutritional product—regardless how good the analysis looks—if it is not acceptable to the patient.

MERITENE Whole Protein Supplement *is* acceptable to patients because of its pleasant ice-cream-like taste. (Try it yourself!) And it's easy to prescribe, easy to administer, and economical for patients who use it at home.

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Fat	9.5 gm.	15.0 gm.
Carbohydrate	28.6 gm.	24.7 gm.
Iron	4.46 mg.	1.5 mg.
Calcium	.58 gm.	.31 gm.
Phosphorus	.46 gm.	.33 gm.
Vitamin A	2380 I.U.	940 I.U.
Thiamine	.77 mg.	.14 mg.
Riboflavin	1.64 mg.	.56 mg.
Ascorbic Acid	25.7 mg.	3.0 mg.
Vitamin D	161 I.U.	31 I.U.
Cholesterol	38.4 mg.	299 mg.
Calories	270	291 mg.

*Eggnog nutritive value from Bowes & Church, 7th Ed. 1951

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in Sydney Australia, I am Chief Dietitian in a 600-bed hospital, and we are now planning to build another 600-bed section, but to keep the food service separate from that which exists now. I have visited fourteen American hospitals altogether, from San Francisco to New York.

Similarities among U. S. Hospitals

Of the hospitals which I visited, it seemed to me that all had certain points in common, including:

1. Shortage of dietitians and/or dietetic interns, with two exceptions.
2. Increasing use of dietary aides, food service supervisors, and dietary clerks.
3. Use of selective menus for all patients, with three exceptions.
4. Use of cafeteria service for staff, some on "pay" system, some on ticket for student nurses.
5. An effort to centralize cooking and distribution, sometimes by central tray service, sometimes by central serving pantries. Several hospitals were also centralizing food preparation in a common preparation area to achieve more control and to relieve cooks of chores.
6. Difficulty to a greater or lesser degree with ice cream, toast, and beverages.
7. When *new* kitchens had just been built or when they were about to be built, the dietitian worked in close contact with the architect and administrator.
8. An extremely high morale and a good professional status in the hospital hierarchy.
9. The desire to keep modified diets insofar as possible prepared in the central kitchen, and the wishful thought that they should not constitute as high a percentage of the total diets as they do.
10. There seemed to be no effective means of checking plate waste, or in any case rectifying it.

Unique Aspects in Certain Hospitals

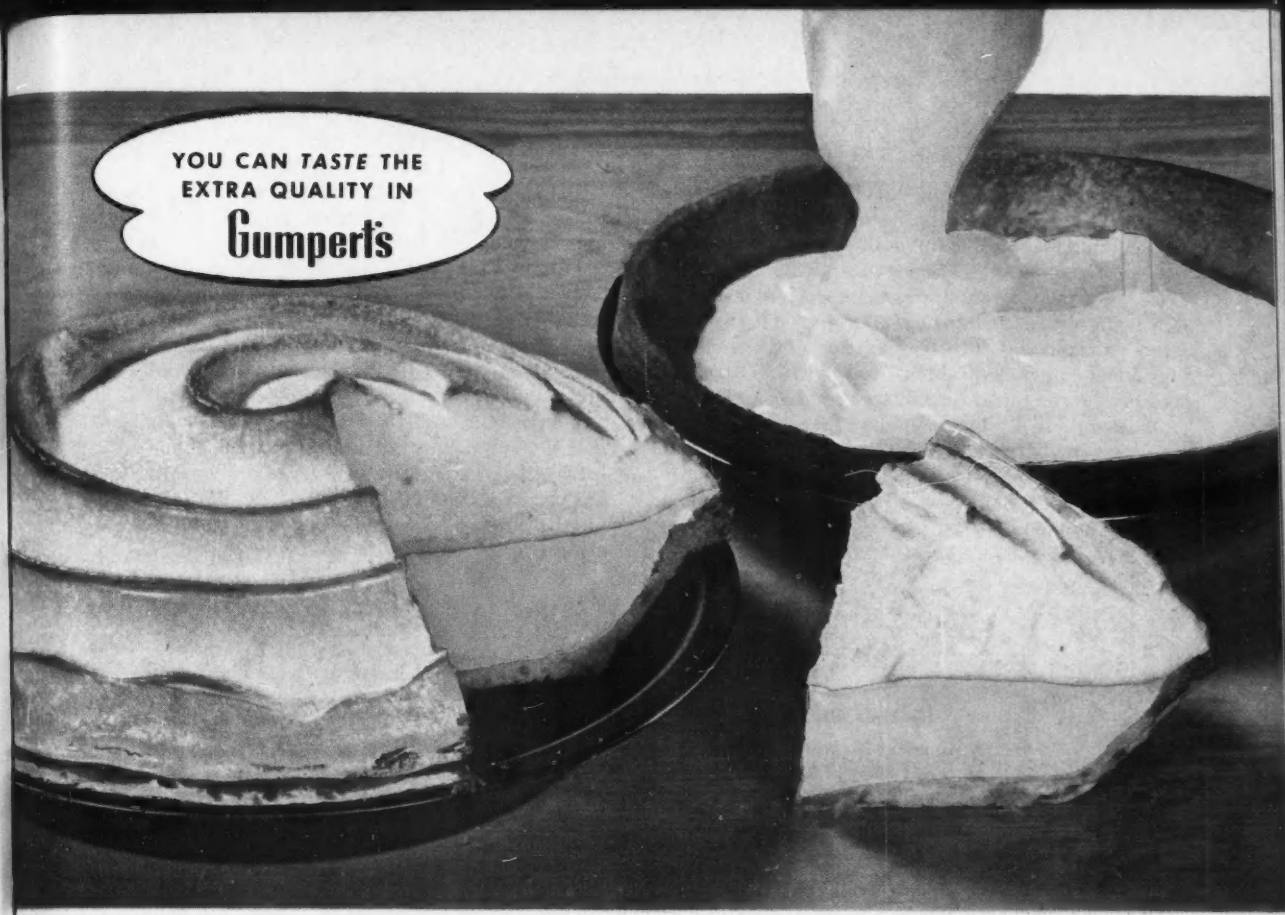
In addition to the above observations, a number of operational points in some but not all of the hospitals visited were of interest. These included:

1. In two hospitals, the bread was made on the premises and the dietitians were sure it was "best." It was certainly delicious. Most hospitals made their own baked goods other than bread, but some bought Danish pastries, rolls, and even pies.
2. Three hospitals employed their own butchers and were convinced this was best, but the trend was towards more and more prefabricated meats.
3. In three hospitals, the traditional use of the stock-pot had been forsaken, and canned soups and bouillon cubes were used.
4. Air-line type food conveyors were used in two hospitals. Personnel admitted that weaknesses were: the final addition of beverages, done in one hospital by the nurses and under protest; the difficulty of serving toast; the keeping cold of ice cream and sherbert; and the fact that any carelessness in packing trolleys in rotation led to great trouble.
5. In three hospitals, help in handling trays from "the nursing side" had been completely eliminated. In others, nurses aides' help at meal time was retained, while in one, the dietary service still relied largely on nurses to serve the trays.
6. Dietitians in one hospital, where the kitchen was spotlessly clean, used printed "check sheets" for cleaning.
7. China was used in preference to plastic in several hospitals, and in two, all linen tray cloths and napkins were used.
8. Remarkably fine systems of cost accounting were seen in two hospitals; others worked mainly to an allowed food cost budget.
9. In several hospitals, there were basement cafeterias for personnel—admittedly not the choice of the dietary department.
10. In three hospitals, every tray—modified diet and otherwise—was served from the same line at the same time.
11. The doctors' dining room in four hospitals was separate from that used for other personnel.
12. Thorough-going coffee shop or restaurant facilities for patients' visitors or relatives was seen in four hospitals.
13. In two hospitals, only the dietitian had complete charge of all food buying, without the help of a purchasing officer, including bulk staples, china, silver, and so on.
14. Four hospitals had complete metabolic units under a dietitian.
15. In only *one* hospital was hot coffee given before breakfast.

Putting These Observations to Use

This already long list could be enlarged. However, from it, I have selected several points which seem of special interest to my situation in Australia. My general conclusions which follow may, of course, quite easily change dramatically on further thought.

1. I prefer a decentralized service, in which the food is *cooked* and to some extent *portioned* centrally and distributed to serving pantries where trays are set up with cold food and completed with hot dish, toast, beverage, and so on.
2. Toast, eggs, ice cream, and beverages should, I feel, be added as close to the patient as possible, that is, in the ward pantry. Each pantry should have its own ice cream wells.
3. One well equipped pantry could deal with three small or two large wards, approximately eighty patients.
4. Some provision should be made for a hot drink before breakfast, and a hot drink after the evening meal; otherwise the break in time is very great, particularly for restless patients.
5. The cafeteria system for nurses and staff is



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ideal, preferably on a full pay basis; however, the doctors in our own hospital would, I feel, still prefer part cafeteria service (soup and beverage) with waitress service for the remainder of a meal.

6. We would retain the service of junior nurses (the equivalent of nursing aides) to pass out trays, as I feel strongly that the "tray-by-tray" system is the only ideal target. For this reason, with 600 beds, I could not recommend central tray service.

7. I would like a little closer cooperation between the nurse-in-charge and the dietitian in the ward.

8. I reserve my decision on the selective menu.

9. I have seen many carefully and cleverly planned kitchens and will try to avoid as many of the old pitfalls as possible.

10. I will stick to my sixteen-year-old conviction that professionally trained cooks, while sometimes opinionated and trying, are best.

11. I am convinced that good cost control is possible and not even terribly difficult, and I shall try to avoid some of the plate waste which I could not help noticing in the United States.

12. I will try to have individual tea and coffee pots.

I have been delighted and grateful for the great help given to me by American dietitians. Some of the hospitals I visited were very large, some quite small. In every case, people "put themselves out" to be kind and helpful. I appreciate this all the more because I always asked to visit at meal time!

British Dietitians' Impression of American Dietetics

In American hospitals, the senior dietitian is known as the Director of the Dietary Department and the School of Dietetics; she is responsible for menu planning, food purchasing, food preparation and service to staff and patients, metabolic wards, staff management, and the dietetic intern programme. The food stores, kitchens and staff cafeterias are under the control of the administrative dietitians, while therapeutic dietitians are responsible for the ward kitchens and the service of both normal (house) and special diets to patients . . .

The therapeutic dietitians are attached to the wards or floors of the hospital, and have at least a desk, if not an office, there. They are responsible for seeing that the patients get the food they like, compatible with their condition and diet. Each dietitian may look after 20–70 patients depending on whether the service is private, semi-private or general. . . . Patients on light, soft and fluid diets will be guided by the dietitian or diet aide in their choice, while patients on therapeutic diets are all visited by the dietitian who will offer them foods suitable for their individual diets. Because of the shortage of dietitians and the obvious waste in using them for non-professional duties, much attention has been given to the employment of diet aides. These are women who are trained on the job to lay and serve trays, visit patients, distribute and collect selective menus, take ward inventories, and summarize food orders for the kitchen. In her place, the diet aide is a valuable assistant, but there is the danger of her assuming the dietitian's work when there is a shortage of qualified dietitians. . .

We became very much aware of the administrative ability of the senior dietitians [in the U. S.], and we feel that there is a good deal to be learned from their experiences and methods. In a country as large and diverse as the U.S.A., it is most difficult to generalize as we must do. We saw very wide differences in the standard of food service to patients. On the whole, the general standard of food service is good; a wide variety of well cooked foods is attractively served; the standard of special diets depends on the ability of the therapeutic dietitians. It was our impression that the best dietitians eventually moved into more senior posts as administrative dietitians. In comparison with teaching hospitals [in Britain], we think that the therapeutic diets were of a lower standard; we do not consider this due to the system of food service but to the approach of the therapeutic dietitians who seem to lack sufficient knowledge of the diet in relation to the condition of the patient.

—*From Dietetics in America. 2. Food Service in Hospitals. By J. G. Ingram and J. M. Vasey. Nutrition 10: 363, 1956.*

INSIDE SCIENCE

THE VITAL STORY OF

Breakfast Cereals

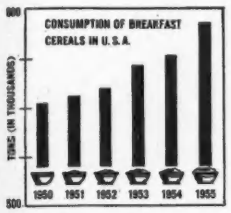
with essential vitamins and minerals restored

by Science Writer

New Edition

AMERICA LIKES BREAKFAST FOODS

Let no one doubt the popularity of breakfast cereals among Americans. The chart below traces the consumption of these fine foods between 1950 and 1955. During that period annual consumption rose by *76,000 tons*. In just one year, 1955, Americans ate 2½ lbs. of hot and 4.8 lbs. of cold cereals per person!



Why are breakfast cereals so well-liked? They are tasty; they are easily served; they appeal to busy homemakers, as well as institutional dietitians, because they are readily available in a variety of flavors at a modest cost. They add interest and value to an important but sometimes neglected meal—breakfast. Their use is extending to between-meal and party snacks, too.

Many grains are processed to make breakfast cereals: wheat, corn, oats, rice. Eaten with fruit and milk or light cream, they contribute an excellent combination of basic, flavorful, nutritious foods to the diet.

Better Foods for Better Health Through Restoration

The science of nutrition has advanced rapidly. In the manufacturing process of some cereals, some of the essential "B" vitamins and minerals are subject to some loss, just as with other foods. These losses are inescapable when such grains are prepared for human use. When this became known, manufacturers acted to overcome the losses. They adopted restoration.

Restoration simply means that certain important vitamins and minerals are restored to the cereal food during processing, so that the vitamin and mineral values in the finished product are generally equal to the whole grain values of those elements. Wheat, corn and rice products are customarily so treated. Vitamins B_1 (thiamine), B_2 (riboflavin), niacin (another "B" vitamin), and the mineral, iron, are those most widely restored. Vitamins C and D are also sometimes added.

Pre-sweetened cold cereals emphasize the nutritional importance of added vitamins. Increased calories require more "B" vitamins for best utilization of the food.

Why the Vitamins are Important

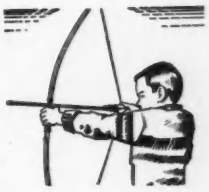
Physicians and diet experts have proved that vitamins are essential to prevent certain deficiency diseases and to contribute to robust good health.

Vitamin B_1 (thiamine) helps build and maintain physical and mental health. It is essential for normal appetite, intestinal activity, and sound nerves. A lack of this vitamin leads to beriberi, a rarity in the U. S. A., but still a very serious health problem in other parts of the world.

Vitamin B_2 (riboflavin) is essential for growth. It helps to keep body tissues healthy and to maintain proper function of the eyes.

Niacin is needed for healthy body tissues. Its use in the American diet has been largely responsible for the virtual disappearance of pellagra, a serious disease.

Vitamin D helps children develop normal teeth and bones. It prevents the development of certain abnormal bone conditions in adults.



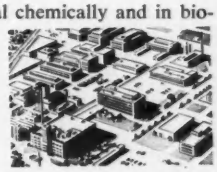
Iron is essential for making good red blood and for the prevention of nutritional anemia.

Where Do the Vitamins Come From?

At about the same time that processing losses in breakfast cereals became known, other developments in the scientific world made available ample supplies of vitamins at economical prices. Thus, the nutritional contribution of some breakfast cereals could be, and was, greatly improved through restoration.

Since the early days of breakfast food restoration and of white flour and white bread enrichment, the world-famous firm of Hoffmann-La Roche has supplied top quality vitamins *by the tons*. Pioneering work in its laboratories and by its collaborators resulted in the "duplication" of some of nature's extremely complex substances. First, the chemical composition of the vitamin was learned. Second, the pure substance was isolated. Third, the "duplicate" was made by synthesis. And fourth, the laboratory techniques were extended to large scale commercial operations.

The manufactured "duplicate" is identical chemically and in biological activity with nature's own product. A vitamin is still a vitamin regardless of whether nature or man made it. So efficient is large-scale manufacturing, that vitamins are sold at a lower cost than if they were extracted from natural sources.



This article is one of a series devoted to the story of vitamin enriched or restored cereal products: white flour, white bread and rolls, corn meal and grits, macaroni products, white rice, breakfast cereals, farina. Reprints of this article, of any other in the series, or of all are available without charge. Please send your request to the Vitamin Division, Hoffmann-La Roche Inc., Nutley 10, New Jersey. In Canada, Hoffmann-La Roche Ltd., 286 St. Paul Street, West; Montreal, Quebec.

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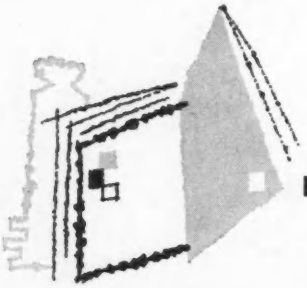

BOOK REVIEWS

Guide for Estimating the Minimum Family Budget. By Nutrition Committee, Health Council of United Community Services of Metropolitan Boston. Boston: United Community Services of Metropolitan Boston, 1956. Paper. Pp. 14. Price $1.

This *Guide*, prepared for Boston agencies by a Nutrition Committee of the United Community Services, is brief and well organized. These two factors contribute to its usefulness as a tool for social workers, public health nurses, and other professional workers helping families with their economic problems. Nutritionists and home economists who help families with food problems or who act as consultants in health or welfare agencies will find the section on food particularly useful. The "Interpretation of Food Requirements" is well stated. The extensive experience of the Nutrition Committee, headed by Elizabeth Caso, gives this section an added significance.

Other major areas of family expense are also included. The *Guide* gives clothing allowances, but does not include the standard which is the one developed and used by a local public agency. If this information is easily available to all using the *Guide*, the lack of duplication is to be commended. Home economists in other agencies would appreciate reference to the source of the fuel and electricity figures used, and a definite statement on whether clothing upkeep supplies are included, and where, in the budget.

Suggested modifications seem arbitrary. However, the Committee, on the first page of the *Guide*, states that inquiries will be welcomed and members will assist with interpretation. The telephone number of the agency publishing the *Guide* is given, and since the *Guide* is intended for local use, the opportunities for direct community service are increased thereby. The suggested reading list, although brief, can serve three groups of people: professional people actively concerned with planning food guides; professional people with a layman's interest in food; and families needing definite suggestions for meal planning and preparation, and food buying.—*Helen Brecht, Home Economics Consultant, Illinois Public Aid Commission, Chicago.*

Diabetes Mellitus—Handbook for Physicians. By Howard Root, M.D., F.A.C.P., and Priscilla White, M.D., Sc.D., F.C.A.P. New York: The Blakiston Division, McGraw-Hill Book Co., 1957. Cloth. Pp. 346. Price $7.

Intended as a reference for general practitioners, this book contains information on the treatment of diabetes in all age groups, under various conditions of stress, and with consideration for the usual complications of the disease. The print is easy to read, the text easy to follow, and an adequate index is provided.

The authors are long-time associates of the well known Joslin Clinic in Boston, and the therapy they promote is aimed at strict chemical control of diabetes as practiced at the Clinic. With reference to diet, this means that "every diabetic. . . should be urged to weigh his daily diet." In addition to detailed information about weighed diets, the Exchange Lists are included in the text.

Information about diet appears in seven of the twenty-one chapters, one of which is devoted solely to "Treatment with Diet." This organization does not detract from the usefulness of the book as a reference in the reviewer's opinion. The fact that discrepant material is found in different chapters does limit its value, however. For example, how to calculate the dietary needs of children is described in two chapters; unfortunately the details presented differ considerably. It is further disheartening to find such out-of-date material included as the 1948 revision of the Recommended Daily Dietary Allowances.

Careful reading of the book discloses that discrepancies in the presentation of details are not limited to dietary subjects. While not in a position to evaluate the book as a medical reference, the apparent careless handling of material causes the reviewer to question its value as a reference for dietitians.—*Dorothy M. Youland, Nutrition Consultant, Chronic Disease Program, Division of Special Health Services, Public Health Service, Washington 25, D. C.*

Handbook of Biological Data. William S. Spector, Editor. WADC Technical Report 56-273; ASTIA Document No. AD 110501. Wright-Patterson Air Force Base, Ohio: Wright Air Development Center, 1956. Paper. Pp. 584. (Also available from W. B. Saunders Co., Philadelphia. Price $7.50)

This monograph consists of a compilation of 445 tables, charts, and graphs in the field of plant, animal, and preclinical sciences. Over four thousand scientists are listed as contributors or reviewers of the data in this handbook. The material is classified under the following categories: Biochemical and Biophysical Characteristics; Genetics, Cytogenetics, and Reproduction; Development and Morphology; Nutrition, Digestion and Metabolism; Respiration and Circulation; Other Physiological Activities and Performances; Biologically Active Compounds; and Environment and Survival. In addition, there is an appendix containing such material as taxonomic classifications, logarithms, and antilogarithms.

It seems unfortunate this monograph was designed to include rather than supplement material which has already appeared in the earlier monographs in this series or in chemistry handbooks. Because of the great volume of material covered, tables have been so condensed and abbreviated, and the print so small, that reading and interpretation becomes very difficult, and space is not available for sufficient references. This monograph seems to be an attempt to make available any information that the general scientist or specialist may need. This is an impressive undertaking and when considered from that viewpoint, it probably meets its aim. It does not, however, lend itself to a practical working tool.—*Frieda L. Meyer, Ph.D., Director, Research Laboratory of Human Nutrition, University of Alabama, Tuscaloosa.*

Biochemical Individuality. By Roger J. Williams. New York: John Wiley & Sons, Inc., 1956. Cloth. Pp. 214. Price $5.75.

This book is welcome and reasssuring to those of us who have participated in longitudinal research and have taught our students the concept of individuality of structure and function for over a quarter of a century. Those whose education and thoughts have been emphasizing conformity and generalities from cross-sectional data dependent on central tendency of statistical evaluation as "normal," "man as one," or "people do," will find the discussion with its sound evidence, difficult to believe. The book should have thorough study for the understanding of "biochemical individuality" and for developing insight into everyday observations and measurements whether one is studying human beings or applying nutritional principles to individuals as patients or well individuals in various physiologic conditions of life.

The author, Roger J. Williams, currently President of the American Chemical Society, is now Director of the Bio-

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chemical Institute, University of Texas. He is known particularly for his work on the microbiologic approach to the study of vitamins and discovery of pantothenic acid. Other research led to the publication of more than 150 scientific articles and several books.

A listing of the titles of the chapters outlines the book: Biochemical Variation—Its Significance in Biology and Medicine; Genetic Basis of Biochemical Individuality; Anatomical Variations—Significance; Individuality in Composition; Individual Enzymic Patterns; Endocrine Activities; Excretion Patterns, Pharmacological Manifestations; Miscellaneous Evidences of Individuality; Individuality in Nutrition; The Genetotrophic Approach; Implications for the Biological Sciences; Implications for Medical and Dental Research; and Implications for Advance in Psychiatry. The evidence on biochemical individuality as the basis for the genetotrophic concept is given by review of some of the literature and by examples from Williams' own research and of others in the first ten chapters. The statements on the principles and their values as well as interpretations are clearly proposed and stated in Chapter 9, and implications are interestingly proposed for various fields of research in the last three chapters.

In the medical sciences variability among individuals deserves manyfold the attention it receives. There is a vast array of attributes in existence in each human being, and it is probable that each is a deviate in some respect. This may not be immediately obvious, but it may have bearing on susceptibility, unique needs, and differing cell chemistry.

The principle of genetic gradients is important in understanding metabolic trends. If some individuals, for genetic reasons, have some extremely low blood values or thyroid activity and others have extremely high, the principle of genetic gradients would suggest that graded intermediate activities should exist in any sample population.

The typical tables of "normal" values of numerous blood constituents need integration into the life time story. Each figure is assumed to be representative of each individual's history, whereas, from horizontal studies, it is found that there is intra-individual variation due to many factors; seasonal, diurnal, past metabolic experiences, and so on.

"Each individual, normal or not, it appears, must have a distinctive endocrine pattern which is based upon the anatomical and physiological potentialities of each gland and the intricate balances which exist between the different endocrine agents. The distinctiveness of these patterns involves differences in single items not of the order of 10, 20 or 50 per cent, but often differences of as much as 10-fold or more. The endocrine patterns of different people appear to be fully as diverse as are the habitations in which human beings live."

Chapter 9, "Miscellaneous Evidences of Individuality," includes some areas of particular interest to dietitians: basal metabolism, temperature-control patterns, sensitivity to pain, effects of oxygen deprivation, variations related to blood pressure, blood flow, and taste sensitivities.

"Individuality of Nutrition" (Chapter 10) is based on the evidence in preceding chapters which indicates that individuality of nutritive needs may have a host of basic causes beginning with inheritance. In the functioning of the body in respect to food utilization, some of the variables may be in appetite, digestion, rate of absorption, transport, enzyme gradient of function in the cells, endocrine gradient and interrelationship, renal threshold, as well as a multitude of variables due to living circumstances. The central theme of this chapter is concisely stated in the author's words "(1) each human individual has quantitatively a distinctive pattern of individual needs, (2) from individual to individual, specific needs may vary severalfold, and (3) important deficiencies may exist which have not been discoverable clinically by observing acute outward symptoms."

The concept of the "Genetotrophic Approach" (Chapter 11) is an excellent summary statement based on the fascinating cumulative evidence of individuality of structure and function described in the first ten chapters. It has become apparent that each human person possesses and lives by distinctive body chemistry. Some of us in nutrition and child development have believed for many years what Williams says so well: "While the same physical mechanisms and the same metabolic processes are operating in all human bodies, the structures are sufficiently diverse and the genetically determined enzyme efficiencies vary sufficiently from individual to individual so that the sum total of all the reactions taking place in one individual's body may be very different from those taking place in the body of another individual of the same age, sex, and body size." From this he makes the reasonable, simple summary of the genetotrophic principle: "Every individual organism that has a distinctive genetic background has distinctive nutritional needs which must be met for optimal well-being. . . The importance or nonimportance depends clearly upon how great the individual variability is."

Nutrition has succeeded in the broad principles for the mass, but it has failed (as well as succeeded) to discover the etiologies of many idiopathic human diseases which may be basic to these diseases.

Williams summarizes a portion of the literature and praises research which concerns itself with repeated measurements on individuals under as nearly constant environmental conditions as possible to determine inter-individual differences. A careful survey of books dealing with the basic sciences of medicine (biology, biochemistry, and physiology, for example) will reveal little concern for "human variability and human differences."

"The genetotrophic principle not only offers a basis for understanding many diseases the origin of which is now obscure, but it also clears up the question as to why exceptional individuals exist who in spite of untoward environmental influences live to advanced old age." Williams is presenting a concept as a challenge to further research (and application) in the area of individual nutritional needs. That there are differences may be admitted, but further study and evaluation of the individual trends in variation may be found to be of greater importance in the health field than is now recognized.

The first ten chapters give the evidence of the fact that individuals have unique metabolic patterns. The review of the literature is not as complete as it could be on children and adults (including both pregnant and lactating women). However, enough evidence has been accumulated to provide a "prepared mind" to state clearly a concept long overdue for recognition in scientific literature. It might be said that Williams has stated "the obvious"; actually he has stated the accepted point of view of many in the field of child development in its broadest sense of "the whole child" from conception throughout the multitudinous phases of growth and development in structure and function.

This book is recommended for all who deal with individual human beings of all ages, stages, and conditions in health or disease. It returns our thinking to the dignity of the individual in this world which currently emphasizes conformity and standardization in all phases of living.—*Helen A. Hunscher, Ph.D., Professor and Chairman, Department of Home Economics, Western Reserve University, Cleveland.*

RECENT BOOKS RECEIVED

Dorland's Illustrated Medical Dictionary. 23rd edition. Philadelphia: W. B. Saunders Company, 1957. Fabricoid. Pp. 1598. Price $12.50.

The Care of the Expectant Mother. By Josephine Barnes, D. M., F.R.C.S. (Eng.), F.R.C.O.G. New York: Philosophical Library, 1956. Cloth. Pp. 270. Price $7.50.

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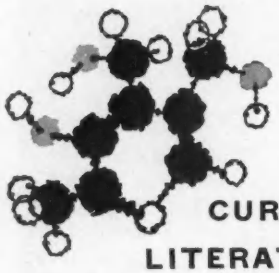

CURRENT LITERATURE

Contributed by Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; Clara Karl, University of Chicago Clinics; Elizabeth H. Tuft, Chicago Wesley Memorial Hospital; and the Journal staff.

AMERICAN JOURNAL OF DIGESTIVE DISEASES

Vol. 2 N.S., January, 1957

* Dietary sodium and potassium in California wines. S. P. Lucia and M. L. Hunt.—p. 26.

Sodium and Potassium in Wines. While alcoholic beverages are seldom found on dietary lists, the moderate use of table wine warrants consideration in the low-sodium diet. Table wines are remarkably low in sodium, are reasonably high in caloric value, and are unquestionably an addition to the flavor and taste appeal of simple foods. To study the extent and variability of sodium and potassium in wine, 277 examples of various types of California wines were analyzed by flame photometry. The mineral content of a wine depends on the mineral content of the grapes used in making the wine, and on the addition or removal of mineral substances during vinification. The sodium content of 164 table wines ranged between 0.97 and 24.15 mg. per 100 cc. with a mean value of 5.50 mg. per 100 cc. (2.39 mEq per liter). Potassium ranged between 28.15 and 157.96 mg. per 100 cc. with a mean value of 93.72 mg. per 100 cc. (24.10 mEq per liter). The sodium content of California red table wines was slightly lower than that of five French red table wines tested, while the potassium content was approximately the same.

AMERICAN JOURNAL OF MEDICINE

Vol. 22, January, 1957

* Hypochromic anemia with hyperferricemia responding to oral crude liver extract. D. L. Horrigan, R. M. Whittingdon, R. Wiesman, Jr., and J. W. Harris.—p. 99.
* Emerging concepts of the structure and metabolic functions of bone. W. F. Neuman and M. W. Newman.—p. 123.

Vol. 22, February, 1957

* Essential hyperlipemia. L. J. Corazza and R. M. Myerson.—p. 258.
* Calcium and phosphorus metabolism. D. H. Copp.—p. 275.

Anemia Responding to Crude Liver Extract. Two patients with an anemia refractory to therapy with iron, vitamin B_{12}, folacin, and leucovorin responded to the oral administration of liquid extract of liver USP (Valentine). The anemia was characterized by: (a) hypochromia and inconstant microcytosis; (b) erythrocytic morphologic abnormalities including anisocytosis, poikilocytosis, anisochromia (an increased number of target cells were prominent in one of the patients); (c) bone marrow hyperplasia with erythroid maturation arrest at an erythroblastic level; and (d) elevated serum iron levels with increased saturation of total serum iron binding capacity.

Essential Hyperlipemia. Four cases of essential hyperlipemia are presented. In three of the four patients, the presenting complaint was severe abdominal pain, suggesting the presence of a surgical emergency. Serum lipid partition studies revealed a marked increase in all of the lipid constituents, especially neutral fat. Three of the four patients who have been followed have demonstrated improvement on a low-fat regimen. All four patients have moderate impairment of glucose tolerance. The mechanisms responsible for essential hyperlipemia and the production of abdominal pain in this disorder have been discussed.

Calcium and Phosphorus Metabolism. The skeleton, which contains over 99 per cent of the body calcium and 90 per cent of the phosphorus, provides a reserve for the maintenance and regulation of these elements. Both have important functions in the cell and body fluids. Calcium balance depends on intake from the diet, loss in urine and feces, and a balance between bone formation and bone resorption. Intake is regulated by intestinal absorption; excretion of excess calcium liberated by bone resorption occurs chiefly in urine. Precise homeostatic control of the serum calcium level depends on bone, parathyroids, and kidneys. Mobilization of calcium from bone during hypocalcemia was found to depend on the extent to which the serum calcium was lowered and on the bone blood flow. The latter has been estimated at 3 to 7 per cent of the resting cardiac output in the dog. There appears to be an equilibrium between a mobilizable calcium pool in bone and the serum calcium. This equilibrium level is 5 to 7 mg. per 100 ml. in the parathyroidectomized animal and 10 to 11 mg. per 100 ml. in the normal animal. It is probable that a "feedback" mechanism regulates the output of parathyroid hormone, the hormone in turn determining the equilibrium level between mobilizable bone calcium and blood. A large part of the dietary calcium is absorbed and subsequently excreted by the kidney. The latter appears to be the main organ for regulation of phosphorus balance. In severe phosphorus deficiency, the requirements of the cellular soft tissues are met at the expense of the skeleton and severe osteoporosis develops. The bones become very thin and low in mineral, while the teeth are relatively unaffected.

THE AMERICAN JOURNAL OF NURSING

Vol. 57, March, 1957

* Must it be junket? G. Millett.—p. 330.

Student Nurse Education in Nutrition. Students at an eastern nursing school who are proficient in simple cooking skills are not only exempt from certain laboratory classes, but they have an opportunity to expand their knowledge of nutrition and to share these experiences with their classmates. Those who pass a pretest are exempt from some or all of the laboratory classes in foods preparation but attend all lectures and are responsible for the usual class work. They are given special assignments in individual research, make special surveys, such as the availability of food in local stores and shopping centers. These reports are used in planning low-cost menus which in turn are utilized in the out-patient department during the senior year. During the first year, foreign cooking is investigated with those students from abroad contributing and demonstrating recipes for the class. Students learn together by doing; they discover how working women can prepare and serve a meal quickly by making one themselves. At the end of each period the students have always prepared a full tray or complete meal. Students learn about vitamins, minerals, and body metabolism by visiting the laboratories of a nearby university. After the broad first course, the students go into diet therapy where they write diets and prepare some special dishes for their patients and teach them about their individual diets.

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 47, February, 1957

* Implications of the Midwest typhoid fever outbreak of 1956. F. L. Woodward.—p. 173.
* Posteruptive effects of fluoridation on first permanent molars of children in Grand Rapids, Michigan. R. L. Hayes, N. W. Littleton, and C. L. White.—p. 192.

Vol. 47, March, 1957

* The Food and Drug Administration regulations as they pertain to foods processed by new methods. M. R. Stephens.—p. 341.

Typhoid Fever. When a half dozen Midwest states became aware in January, 1956, that cases of typhoid fever were being reported in numbers up to eleven per week, it became evident that a major outbreak was under way. The study of early cases yielded no relationship, and it was evident that if there were a common source it must be some food shipped interstate. Seasonal foods were considered as possible factors. A likely possibility was that a particular food was continuing to be contaminated, probably intermittently, at the same source, such as fresh vegetables which can be easily contaminated by polluted water. In the past few years there has been a transfer of packing operations from the warehouse to the field where sanitary facilities have been generally poor. A solution to this has been the provision of mobile chemical toilets. This outbreak has furnished a challenge to all persons responsible for sanitary control of food production, processing, and marketing. Even though the real source may never be determined, the investigation of this outbreak may serve

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to focus attention on many areas of weakness and ultimately result in increased health protection.

Effect of Fluoride on First Molars. Fluoridated water was ingested by 184 Grand Rapids children since January, 1945, and by 133 Muskegon children since July, 1951. These school children had two or more first permanent molars in eruption. The data indicated that the Grand Rapids children consistently had fewer and smaller cavities than the Muskegon children. For all surfaces the mean caries-score was 17 per cent lower in Grand Rapids. The findings support the hypothesis that artificial fluoridation will inhibit caries in teeth that have erupted prior to fluoridation.

Need for More Food Laws. For a half-century the federal Pure Food Law has been concerned with poisonous or deleterious food additives. Advances in food chemistry and food technology have brought about a tremendous increase in the use of various kinds of additives, but except for the fairly recent pesticide amendment, there is nothing in the law that requires these additives to be tested and found safe before they are put on the market. The law in this area is not preventive—it is merely punitive, imposing penalties on the use of those additives which have proved to be harmful. If safe tolerances can be established for pesticides, they can certainly be established for other food additives. Although additives may be non-toxic, they may be harmful unless used in carefully controlled amounts. Eleven bills were introduced in the last Congress to require the testing of new additives. Perhaps the Congress convening in January can work out adequate and practical legislation.

ANNALS OF BIOCHEMISTRY AND EXPERIMENTAL MEDICINE

Vol. 16, April, May, June, 1956

* Studies on fish flour. K. Ramamurti.—p. 9.

* Studies on the effect of canning and storage on the nutritive value of some common vegetables. Part III. Changes in ascorbic acid content of cauliflower. M. C. Malakar and S. N. Banerjee.—p. 29.

* Thiamin values of pure-bred strains of some cereals and pulses. S. N. Banerjee and B. C. Guha.—p. 35.

Vol. 16, July, August, September, 1956

* Studies on the nutritive value of rice and rice diets. I. The nutritive value of husked, undermilled and milled raw rice. V. Subrahmanyan, M. N. Rao, and M. Swaminatha.—p. 81.

Fish Flour Studies. Using five different diets, one containing fish flour and one designated as the control diet, pairs of matched male and female rats were nourished from the age of four weeks on. The control diet proved to be superior to all of the other diets tested as evidenced by resulting growth curves. Fish flour and enriched rice flour diets provoked an early growth rate and were consistent with those obtained in rats on the control diet. However, beyond the four-week period, the control diet exhibited its superiority. No abnormality was noticeable in the gross autopsy of the animals on the fish flour diet, except that the stomach mucosa was somewhat inflamed. This irritation calls for detailed histologic examination to confirm whether the fish flour was responsible for the irritation.

Ascorbic Acid Content of Canned Cauliflower. This systematic study was undertaken to find how the different operations during canning and storage affect the retention of ascorbic acid in cauliflower. Blanching apparently increased the ascorbic acid content of some samples. Out of twenty-two samples, fifteen showed an increase when kept shredded at room temperature for 3 hr. The effect of processing (autoclaving) showed that raw samples lost an average of 19.8 per cent ascorbic acid calculated on the wet basis. The distribution of the vitamin in the solid and liquid portions was roughly in the proportion of 1:2. The effect of storage temperatures varying between 15°C. and 42°C. showed that the total loss of ascorbic acid at the end of the first week is about 39 per cent, of which 20 per cent is due to autoclaving. After the first week losses steadily mount until, at six months 65 per cent is lost. During storage, solid and liquid acid distribution was in the rough proportion of 1:4. When 100 mg. ascorbic acid are added just before sealing, the total loss of acid rises to 59 per cent at six months. Fortified cans showed better color and texture and a solid/liquid distribution ratio of 1:2.5.

Thiamine Values of Cereals and Pulses. Cereals and pulses lose much less of their nutrients in the process of milling, washing, and cooking than rice and thereby supply some of the thiamine requirement of the rice-eater. The experiment in question was undertaken to determine the thiamine content of some pure-bred strains of red gram and rice and to discover whether thiamine was a reasonably stable characteristic of the particular variety. Results showed that the thiamine values of different strains differ widely: those of wheat from 2.0 to 6.7 mcg. per gram; juar, 1.0 to 2.6; Italian millet, 3.1 to 4.5; red gram, 0.5 to 4.5; green gram, 0.4 to 2.9; and black gram, 1.3 to 3.0. Though derived from two successive years' crops, the thiamine values of each variety did not differ markedly from each other. Although the vitamin values differed among different strains from the same growing station, the same strains grown in different stations were approximately similar in thiamine content. Therefore, it was concluded that the thiamine value of each variety of cereals and pulses is a characteristic feature of that variety and does not seem to depend on environmental growing conditions.

Nutritive Value of Rice and Rice Diets. The over-all nutritive value of the different samples of rice prepared from the same sample paddy showed progressively less quantities of protein, B-vitamins, and minerals in raw undermilled rice and milled rice as compared with husked rice. Marked differences were noted in the case of B-vitamins whereas there was no difference evident in calcium content; all three types were highly deficient. The total and phytate phosphorus contents of husked rice were much higher than those of undermilled or milled rice samples. The over-all nutritive value of poor rice diets was not significantly different when vitamins A and D and fat are added. When the diets were supplemented with calcium lactate (supplying 40 mg. calcium per 100 gm.) husked and undermilled diets were significantly superior to milled rice. When raw milled rice diet was supplemented with extra B-vitamins (raising the B-vitamin content of raw rice to that of husked rice), a marked increase in animal growth rate was noted. The growth promoting values of the poor vegetarian diets containing husked rice or undermilled rice were significantly higher than those of the diet containing raw milled rice. All diets increased in growth-promoting value with the addition of calcium. No significant difference in the retention of calcium was observed among the three groups of rats fed poor vegetarian diets containing the different samples of rice, but retention of phosphorus in rats fed on husked rice diet was significantly more than retention found in animals on undermilled and milled rice diets.

ANNALS OF INTERNAL MEDICINE

Vol. 46, January, 1957

Problems in the management of ulcerative colitis, with particular reference to ACTH and the adrenal steroids. M. Sklar, J. B. Kirsner, and W. L. Palmer.—p. 1.

Polycythemia of obesity: Further studies of its mechanism and a report of two additional cases. M. H. Weil and A. S. Prasad.—p. 60.

* Diabetes mellitus and clinical research: a study of insulin resistance. E. Downie.—p. 126.

Vol. 46, February, 1957

Postural adjustments and protein excretion by the kidney in renal disease. S. E. King.—p. 360.

Diabetes Mellitus and Clinical Research. Certain aspects of the phenomenon of insulin resistance illustrate the need of a combined approach by physician and scientist for a satisfactory solution of many clinical problems. Insulin resistance does not follow a uniform pattern. At times the resistance is transient, and in some instances no insulin is demonstrable in blood plasma at the height of resistance. Later, with the recovery of tolerance, insulin can be demonstrated in blood plasma.

ARCHIVES OF INTERNAL MEDICINE

Vol. 99, February, 1957

* Treatment of diabetic acidosis. A. R. Colwell.—p. 260.

Diabetic Acidosis. Skillful treatment of diabetic acidosis depends on: (a) prevention by elimination of its common causes in advance; (b) precise diagnosis; (c) correct appraisal of severity; and (d) thoughtful and discriminating use of crystalline insulin, with replacement of depleted water and salts, and sugar later when needed.

ARCHIVES OF PEDIATRICS

Vol. 73, December, 1956

* Bacteriological counts on infant formulas mixed in the home. D. B. Lathrop.—p. 451.

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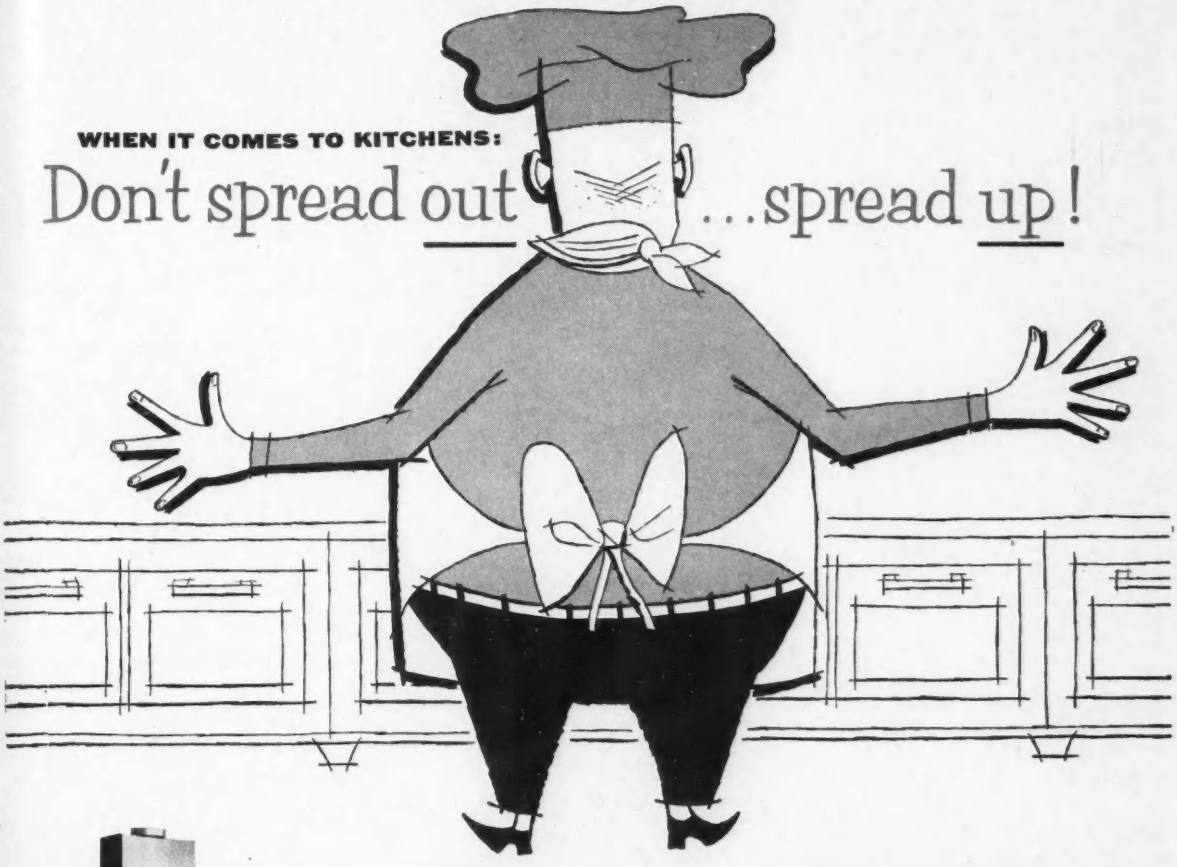

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Bacteriological Counts on Infant Formulas. An attempt was made to culture infant formulas as prepared in the home to determine the amount of contamination. Terminal sterilization is the best method of preparing large amounts of daily formula for hospital nurseries and for mothers who bottle-feed their babies entirely, but in the case of the partially bottle-fed baby whose mother needs only to mix one or two bottles a day, terminal sterilization is inconvenient. These mothers were asked to mix a formula powder into sterile water-filled bottles under refrigeration. It was found that the human element can noticeably decrease the sterility of the formula by finger contact, handling of the nearly sterile powder, or by any number of wrong techniques. Formulas cultured after the infant had drunk from an 8-oz. bottle showed the amount of contamination from regurgitation varied according to the amount of formula consumed, or rather, according to the amount the infant regurgitated back into the bottle in the cases where different bottles containing 1 and 4 oz. regurgitated milk were left at room temperature for 1 hr. When babies were allowed to drink 4 oz. from a full bottle and the bottle was left at room temperature for 2, 4, and 6 hr. and then plated, bacteria increased in approximately a regular logarithmic progression. Although the infant may significantly contaminate his formula by regurgitation while he drinks a part of it, it is undeniable that the contaminating bacteria come from his own natural flora and are not necessarily pathogenic to him if he ingests them at a later time. But, as is shown, if the formula bottle is left at room temperature for a number of hours and not refrigerated immediately, the bacteria will increase greatly in numbers. Whether the increased number of bacteria would now be pathogenic to the infant is difficult to determine scientifically, but there is no question that the infant will be imbibing a greater number of bacteria from the milk than he originally regurgitated into it. Formula contamination, in any case, can easily occur, even with relatively clean technique, and the milk remaining in a baby bottle after part has been drunk contains large numbers of bacteria and should be treated accordingly. Modern refrigeration is adequate to halt bacterial growth in infant formula.

THE BULLETIN OF MATERNAL WELFARE

Vol. 4, January–February, 1957

* Role of calories in protein utilization during pregnancy. H. G. Oldham.—p. 10.

Calories in Protein Utilization in Pregnancy. Relatively large amounts of protein are recommended for pregnant women, since large amounts of nitrogen are required by the fetus and accessory structures and the sources of this nitrogen are the protein-containing foods. The manner in which the protein is utilized, however, is as important as the amount provided. The nitrogen is retained and utilized only when the diet contains sufficient calories to supply the energy requirement. Otherwise the protein is used for energy. In a study of seventeen pregnant women living in their own homes on self-selected diets, only three were retaining nitrogen. The amounts of nitrogen lost or retained showed little or no relationship to the amount of dietary protein. To ascertain whether the lack of nitrogen retention was due to low caloric intakes, the results were compared with published results obtained in earlier studies on women who were retaining nitrogen. The protein intakes of these women were in many cases no greater than those of the seventeen who retained little or lost, but the former had considerably higher caloric intakes. The combined results of these studies showed that the amount of nitrogen retained depended more on the caloric than on the protein intakes. To determine the proper caloric intake for the pregnant woman, the individual should be studied by the obstetrician and the clinic nutritionist.

CANADIAN JOURNAL OF PUBLIC HEALTH

Vol. 48, February, 1957

The care and operation of dishwashing machines to insure bacteriologically clean dishes. H. C. Pharoah.—p. 70.

DIABETES

Vol. 6, January–February, 1957

* Metabolic effects of arylsulfonylurea compounds in normal subjects and in diabetic patients. S. S. Fajans, A. R. Hennes, B. L. Wajchenberg, and J. W. Conn.—p. 41.

Metabolic Effects of Sulfa Compounds on Diabetic Patients. Experiments were performed on normal subjects to determine the effects of administration of insulin and of Orinase on blood levels of glucose, pyruvate, and alpha-ketoglutarate. Results indicate that when hypoglycemia is produced by administration of insulin, the early changes in levels of blood pyruvate are opposite in direction from those observed when similar degrees of hypoglycemia are produced by Orinase. These differences suggest that the immediate hypoglycemia induced occurs via different mechanisms. These results do not support the concept that the sulfonylurea compounds produce acute hypoglycemia by stimulating rapid release of endogenous insulin.

FOOD AND NUTRITION NOTES AND REVIEWS

Vol. 13, September and October, 1956

* Dietary survey methods: a review. D. Langley.—p. 81.

Dietary Survey Methods. The basic aim of dietary surveys conducted in underdeveloped countries and primitive communities, such as those made by the South Pacific Health Service, is to serve as an aid in the planning of agriculture, education, health, and economic policies that will improve the nutritional health of the people. In this paper, the limitations, the methods used, and the pitfalls of the dietary survey are reviewed. Great care should be taken in the interpretation of data from the dietary survey. It should be remembered that the subjects investigated have a right to something in return—something in a language that they can understand, i.e., how they are caring for themselves or how they can improve their nutrition.

FOOD RESEARCH

Vol. 22, January–February, 1957

* Quality in baked sweetpotatoes affected by varieties and post-harvest treatments. W. F. Jenkins and M. Gieger.—p. 32.
* I. Effect of storage and of boiling on the ascorbic, dehydroascorbic, and diketogulonic acid contents of potatoes. J. M. Leichsenring, L. M. Norris, and H. L. Pilcher.—p. 37.
* II. Effect of baking and of pressure-cooking on the ascorbic, dehydroascorbic, and diketogulonic acid contents of potatoes. J. M. Leichsenring, H. L. Pilcher, and L. M. Norris.—p. 44.
* Factors affecting the dispersibility of "instantly dissolving" dry milks. A. H. Bockian, G. F. Stewart, and A. L. Tappel.—p. 69.
* Effects of ionizing radiations on plant tissues. II. Softening of different varieties of apples and carrots by gamma rays. F. P. Boyle, Z. I. Kertesz, R. E. Glegg, and M. A. Connor, Jr.—p. 89.

Quality of Baked Sweet Potatoes. Raw sweet potatoes of two varieties increased in reducing and nonreducing sugars during the first six days of curing. Baking increased the reducing sugar content slightly. Only about half as much starch was contained in the roots after baking as before. Dry matter changed little with storage or baking. Weight losses in storage for each variety were about equal. Quality in the baked roots was dependent on the variety and length of curing and storage times employed.

Ascorbic Acid in Boiled Potatoes. Potatoes are an important source of ascorbic acid for low-income groups. Storage and cooking losses can be accounted for by the conversion of reduced ascorbic acid to dehydroascorbic and to diketogulonic acids. There is evidence that dehydroascorbic acid is an effective source of ascorbic acid, whereas diketogulonic acid is not. In this paper the relative quantities of these three compounds in potatoes under various conditions of storage and cooking are reported.

Ascorbic Acid in Pressure-Cooked and Baked Potatoes. In this paper the effect of baking and pressure-cooking and of refrigeration after cooking on the ascorbic acid, dehydroascorbic acid, and diketogulonic acid of a number of potato varieties is reported.

Instant Dry Milks. The state of the lactose and minor changes in protein apparently cannot account for the increased dispersibility of instant dry milks. Instant dry milks characteristically have a larger size and this aids dispersibility. Spray-dried milk has uniform distribution of the components assayed —lactose and chloride. It is proposed that this orientation of readily soluble components on the surface of the instant dry milk aggregates greatly aids dispersibility.

Effect of Irradiating Apples and Carrots. Irradiation of the flesh of seven varieties of apples and five of

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carrots with gamma radiation from a Co^{60} source caused softening of the tissues. In the case of all tissues, a linear relationship was obtained between the percentage change in crushing load and the logarithm of the gamma radiation dosage within these ranges. Thus, when expressing dosage in terms of log R, the same percentage of softening of apples and carrots will occur on the application of similar increments of gamma radiation.

FOOD TECHNOLOGY

Vol. 11, February, 1957

- Effects of added sodium chloride, potassium chloride, calcium chloride, magnesium chloride, and citric acid on meat shrinkage at 70°C. and of added sodium chloride on drip losses after freezing and thawing. E. Wierbicki, V. R. Cahill, and F. E. Deatherage.—p. 74.
- Thermal destruction rates of thiamine in puréed meats and vegetables. E. Feliciotti and W. B. Esselen.—p. 77.
- Nutritive value of the proteins of stored instant nonfat dry milk. A. Z. Hodson and C. B. Miller.—p. 89.
- Effect of reducing agents on cured meat color. G. G. Kelley and B. M. Watts.—p. 114.
- Discrimination techniques in meat acceptance studies. H. D. Naumann, V. J. Rhodes, D. E. Brady, and E. R. Kiehl.—p. 123.

Vol. 11, March, 1957

- Flavor permeability in food packaging and its evaluation. M. Karel, B. E. Proctor, and A. Cornell.—p. 141.
- Improvement of food flavor, fat stability, and nutritional value with sesame products. E. F. Glabe, P. W. Anderson, and A. F. Holtorff.—p. 185.
- Effect of gamma irradiation on cake mixes at high and low moisture levels. H. E. Bauman, H. Baeder, J. A. Stein, C. G. Harrel, and R. A. Larsen.—p. 193.
- Flavor of untreated, oiled, and thermostabilized shell eggs after storage at 34°F. S. F. Banwart, A. F. Carlin, and O. J. Cotterill.—p. 200.

Effects of Chlorides on Meat Shrinkage. Chlorides of sodium, potassium, calcium, and magnesium when added to meat prior to heating increase the water-holding capacity of meat proteins when heated to 70°C. This holds true except in very high concentrations. The juice expressed on heating was less for the calcium and magnesium chlorides than for the sodium and potassium chlorides. Magnesium chloride showed the greatest effect. Citric acid increased shrinkage when added to meat prior to heating. Combinations of the above chlorides were studied with sodium and magnesium chlorides in combination showing the greatest effect in promoting water-holding capacity of cooked meat. Beef was made more tender by treating with a mixture of these chlorides in solution. When sodium chloride is added to meat prior to freezing, less drip is encountered on thawing. This relation parallels closely the effects of sodium chloride on juice expressed on cooking to 70°C.

Thiamine Loss in Puréed Meats and Vegetables. The rate of destruction of thiamine in aqueous solution, phosphate buffered solutions, and selected low acid foods was studied over the temperature range of 228° to 300°F. Thiamine in foods is more resistant to thermal breakdown than is the pure vitamin in aqueous or buffered solutions. It is suggested that the thermal destruction of thiamine in foods may depend on the interrelationship of *pH* and the relative proportions of the free and combined forms of the vitamin. At a given *pH* level, the rate of destruction increased with increasing content of the combined form. Thermal destruction of thiamine in spinach, beef heart, beef liver, and lamb was more rapid than in carrots, green beans, peas, and pork.

Proteins in Stored Instant Nonfat Dry Milk. Deterioration of the protein nutritive value of nonfat dry milk during storage depends largely on the moisture content of the powder and the storage temperature. Now powders are given low heat treatments to minimize cooked flavor and are "instantized" to afford ready mixing with water. They are packed in glass or foil being impervious to moisture. In this study it was found that the protein efficiencies for rat growth of pasteurized milk proteins and those of instant nonfat dry milks stored under favorable conditions for one or two years are similar. Also the lysine contents of both milks are similar.

Reducing Agents and Meat Color. It is known that the addition of nitrite to oxymyoglobin causes the formation of brown metmyoglobin. Heat treatment following the addition of nitrite accelerates the conversion of brown metmyoglobin to pink, denatured nitric oxide myoglobin. The formation of this "cured meat" pigment requires a reducing agent to reduce nitrite to nitric oxide, and metmyoglobin to myoglobin since no reaction takes place between metmyoglobin and nitric acid. In the present study, the ability of several reducing agents to produce and protect the pigment of cured meat was investigated. Cysteine, ascorbic acid, and glutathione were capable of catalyzing the production of nitric acid hemoglobin, regenerating the nitric oxide myoglobin on the surfaces of light-faded cured meat when residual nitrite is present, and protecting the surfaces of cured meat from fading by light. The effectiveness of the three compounds on a weight basis is inversely proportional to their molecular weight. Dihydroxy fumaric acid and dihydroxy maleic acid are too unstable for use and lead to the formation of green, grey-brown products.

Taste Testing Meat. Since consumer research in meat is new, and since it is beset with peculiar technologic considerations, various methodologies have evolved. Consumer preference for meat involves two distinct preferences: visual and eating. Yet, they must ultimately result in a single expression of preference. Three types of methodologies are used—laboratory panel, small urban household panel, and metropolitan panel. The gradual increase in tempo and scale of the different panel phases permits transitionary changes in procedures without appreciable loss of data. Discrimination techniques are well adapted to this pattern of study. Product standardization techniques are necessary to prevent preference bias due to uncontrolled variables.

Permeability of Packaging Materials. A procedure for estimating permeability of packaging materials to organic vapors was developed and tested. The permanganate process was used. Results were obtained on the permeability of several packaging materials to the vapors of ethyl alcohol, acetone, and trimethylamine.

Possibilities of Sesame Seed. Sesame is an oil-bearing seed—ranking as one of the highest in oil content as well as in length of time of cultivation by man. Sesame is starch-free, is high in protein value, and contains anti-oxidant compounds, sesamoline and sesamol. Much of the flavor value and oil anti-oxidant potentialities of sesame have gone unrealized because of the rather sturdy structural nature of the seed. Removal of the seed coat followed by the heat processing yields a new type of product. Grinding this heat-processed seed releases the oil and yields a flavor-rich product. Anti-oxidant value is high.

Effect of Irradiation on Cake Mixes. The ability of gamma rays to kill microorganisms without the use of heat suggests a means by which heat sensitive cereal products might be "pasteurized" to increase shelf life. Batters as well as dry mixes were irradiated. At the level of irradiation that would be required to cause an appreciable decrease in number of bacteria, the color, the odor, and baking characteristics of the cake batters were markedly changed. An appreciable reduction in numbers of bacteria was obtained at low levels (5×10^4 rep) in dry cake mixes. At higher levels, off odors and darkening were apparent in the dry mixes.

Flavor of Eggs after Storage. During an eight-month storage, eggs from three treatments—the untreated, the oiled, and the thermostabilized—declined significantly in interior quality. However, untreated eggs declined more in quality than did treated eggs. A highly significant negative correlation existed between length of storage and decrease in the flavor scores of both untreated and treated eggs. As storage time increased, off flavors were more evident in treated eggs. The off-flavor was more detectable in the egg white than in the egg yolk.

JOURNAL OF AGRICULTURAL AND FOOD CHEMISTRY

Vol. 5, February, 1957

- Nutrients in Central American beans. O. B. Tandon, R. Bressani, N. S. Scrimshaw, and F. Le Beau.—p. 137.

Vol. 5, March, 1957

- Changes in light reflectance and ascorbic acid content of foods during frozen storage. N. B. Guerrant.—p. 207.

Composition of Central American Beans. The kidney bean is second only to maize in importance in the diets of the people throughout most of South America, and it may be the source of 20 to 30 per cent of the dietary protein. The factors influencing protein, methionine, lysine, and tryptophan content of twenty-five varieties were studied, and niacin, thiamine, and riboflavin were also determined. Over-all differences in

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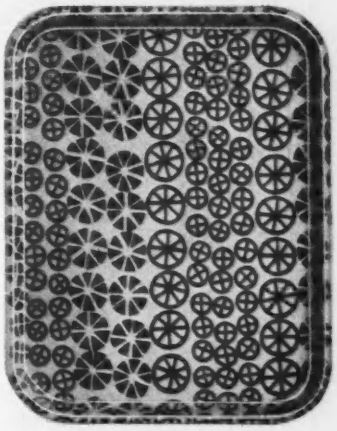

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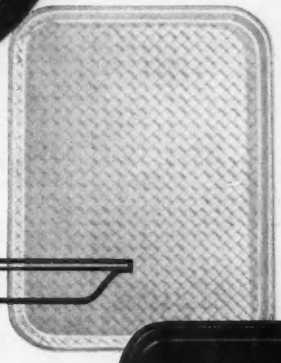

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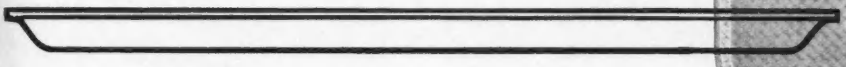

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nitrogen and tryptophan content among varieties and between localities were highly significant. The fertility of the land significantly alters the yield and riboflavin content of the kidney bean, but the content of nitrogen, methionine, lysine, tryptophan, niacin, and thiamine is not detectably affected by fertility differences.

Ascorbic Acid and Color Changes in Frozen Foods. Reflectance measurements made by a recording spectrophotometer and reduced ascorbic acid values determined by a conventional method of assay on samples prepared in a uniform manner from frozen fruits and vegetables stored at 10°, 0°, and −20°F. for twelve months revealed that the storage temperature had a definite effect on the capacity of the foods to reflect visible light and on the reduced ascorbic acid content of the foods. The greatest change in reflectance and in vitamin content occurred in foods that had been stored at the higher temperatures. Changes in the reflectance of the foods during frozen storage seem to parallel changes in ascorbic acid content.

JOURNAL OF THE AMERICAN GERIATRICS SOCIETY

Vol. 5, January, 1957

* The importance of protein metabolism and liver function in geriatric surgical patients. J. H. Schneewind, J. B. Fuller, and W. H. Cole.—p. 1.

Geriatric Surgical Patients. The prognosis in geriatric patients undergoing major surgical procedures is immeasurably improved by high protein intake prior to operation. This is especially true in those who have been malnourished for a long time with consequent negative nitrogen balance and depletion of protein reserve in liver and muscle. Normal plasma protein levels may be frankly misleading in the presence of appreciable weight loss and subsequent depletion of protein reserves. Infection in the form of abscesses, fistulae, and wound drainage may be a serious source of protein loss, both directly and due to depression of protein synthesis. Adequate hepatic function is vital to normal protein metabolism, and has assumed increased importance now that evidence is accumulating relating the liver directly to adrenocortical steroid metabolism.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 163, February 16, 1957

* Cerebral lesions due to vitamin B_{12} deficiency. Foreign Letters-United Kingdom.—p. 576.

Vol. 163, March 2, 1957

* Low sodium milk. Council on Foods and Nutrition.—p. 739.

Vol. 163, March 9, 1957

* Antibiotics in milk. Queries and Minor Notes.—p. 904.

Vol. 163, March 16, 1957

* Nutritional edema. Foreign Letters-India.—p. 969.

* Frequency of overweight. Foreign Letters-Sweden.—p. 973.

* Fatty acids and blood cholesterol. Foreign Letters-United Kingdom.—p. 974.

Cerebral Lesions from B_{12} Deficiency. Changes in the nervous system now known to be due to vitamin B_{12} deficiency occur in the spinal cord, peripheral nerves, and brain. The end-result of untreated cerebral lesions may be a severe dementia even more crippling than the paraplegia produced by the spinal lesions. In the absence of spinal lesions or anemia, the diagnosis of vitamin B_{12} deficiency may be missed. Early diagnosis is essential because the reversibility of symptoms depends largely on their duration. Treatment is with large doses of vitamin B_{12}—an initial dose of 1 mg. followed by 500 mcg. twice weekly for one month, and then not less than 100 mcg. weekly for the next six months.

Low-Sodium Milk. There is available liquid whole milk that has been processed to reduce its sodium content. The process involves passing the milk through an ion exchange resin, resulting in the replacement of sodium with an equivalent amount of potassium. The taste and flavor of the milk are affected very little. A table is given of the comparative compositions of low-sodium and whole milk. Low-sodium milk compares favorably with whole milk in many nutrients. However, there is a reduction by almost 50 per cent of thiamine, niacin, and vitamin B_{12}. Calcium and vitamin B_6 are reduced to about 75 per cent of their values in whole milk. The potassium content is increased to almost twice that of liquid whole milk. This is within the range of the normal intake for adults of 3 to 5 gm. potassium per day. Because of the increased potassium, the ash content is about 12 per cent greater than that of liquid whole milk. The Council stresses that the data are limited and will not yet allow for the setting of final standards.

Antibiotics in Milk. No experimental work appears to have been reported in which an individual sensitive to a specific antibiotic was challenged with milk or eggs from animals or birds receiving that antibiotic. It is unlikely that milk and eggs are vehicles for antibiotics. If present in the flesh of fowl and fish, antibiotics are destroyed during cooking.

Kwashiorkor. It was found that anemia is a constant feature of the syndrome of malnutrition known as kwashiorkor. The anemia may be due to deficiency of protein, iron, or liver principle. Both deficient supply and defective utilization of the concerned nutrients play a part. The response to therapy was slow. Patients treated for a few weeks showed eosinophilia. Pronounced depression of gastric acid secretion was observed in all patients. After a high-protein diet was instituted, gastric acid secretion tended to return to normal levels.

Height and Weight Data for Sweden. The heights and weights of 3500 men and 4000 women prospective blood donors in Sweden were measured. Using the Metropolitan Life Insurance tables, it was found that from the age of forty up, more than 50 per cent were overweight. Of the women over forty, 20 per cent were 20 per cent or more overweight. Weight rose rather steadily with age. Among women, overweight was more common in rural than in urban areas, and among the married than the unmarried women. There was no difference in regard to whether the women had or had not borne children.

Dietary Fat and Serum Cholesterol. It has been suggested that the effects of dietary fat on the serum cholesterol level in man depend on the degree of unsaturation of their constituent fatty acids. Fats containing the "essential" unsaturated fatty acids have been thought to produce lower serum cholesterol levels than those containing saturated acids. The former are present in vegetable fats, the latter in animal fats. The findings of Keys and co-workers do not support the view that the serum cholesterol level in man is a simple inverse function of the essential fatty-acid content or of the degree of unsaturation of the fatty acids in the diet. Their view is that populations increase the fat content of their diets by consuming more saturated than unsaturated fats. The serum cholesterol level is directly related to the total consumption of fat rather than inversely related to the consumption of essential or highly unsaturated fatty acids.

JOURNAL OF AVIATION MEDICINE

Vol. 28, February, 1957

* Effects of pilots' tasks on metabolic rates. P. R. Tiller, H. R. Greider, and E. Grabiak.—p. 27.

Pilots' Tasks and Metabolic Rates. An experiment was conducted on metabolic rates, minute volumes, and respiratory rates in the F9F-5 simulator. Both non-pilots and pilots were used as subjects. The metabolic rate, respiratory rate, and minute volume of all subjects increased with the complexity of the task. Significant correlation between metabolic rate and minute volume indicated that minute volume can be employed as a fair index of metabolic rate. Combat pilots exhibited the highest metabolic rate and minute volume in six out of the seven conditions for which tests were made.

THE JOURNAL OF BIOLOGICAL CHEMISTRY

Vol. 224, January, 1957

* The role of dietary betaine and vitamin B_{12} in choline formation by the rat. R. J. Young, C. C. Lucas, J. M. Patterson, and C. H. Best.—p. 341.

Vitamin B_{12} and Choline Formation. Experiments were conducted with rats to determine the amount of methyl synthesis attributable to vitamin B_{12} and to compare the effects of these newly formed methyl groups with those available from dietary betaine. Betaine plus monomethylaminoethanol was just as effective as equimolar amounts of choline in the presence or absence of vitamin B_{12} for both growth and fat mobilization. These results confirmed the findings of several investigations that vitamin B_{12} is not concerned in transmethylation.

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THE LANCET

No. 6959, January 12, 1957

* "Essential" fatty acids, degree of unsaturation, and effect of corn (maize) oil on the serum-cholesterol level in man. A. Keys, J. T. Anderson, and F. Grande.—p. 66.

No. 6960, January 19, 1957

* Long-term effect of dried thyroid on serum-lipoprotein and serum-cholesterol levels. B. Strisower, J. W. Gofman, E. F. Galioni, J. Pouteau, J. H. Rubinger, and P. Guzvich.—p. 120.

No. 6962, February 2, 1957

* A diet restricted in refined cereals and saturated fats. E. Van Handel, H. Neumann, and T. Bloem.—p. 245.

Fatty Acids and Serum-Cholesterol Level in Man. Serum total and β-lipoprotein cholesterol levels were measured in rigidly controlled experiments on twenty-six men in caloric balance on a diet constant in all respects except for the character of test fats—corn oil, sunflower-seed oil, sardine oil, and butter fat—which were fed in quantities of 100 gm. daily. Other mixed food fats in the diet amounted to 40 gm. daily. Total fats represented 39.8 per cent of the total calories. The mean serum total-cholesterol level on the butterfat diet was 52.0 mg. per 100 ml. higher than on the corn-oil diets, 35.8 mg. higher than on the sunflower-seed-oil diet, and 39.8 per cent higher than on the sardine-oil diet. The serum total-cholesterol level rose after the change from corn oil to sunflower-seed oil and fell after the reverse change, the average difference being 9.3 mg. per 100 ml. The serum total-cholesterol level rose after the change from corn oil to sardine oil and fell after the reverse change, the average difference being 20.2 mg. per 100 ml. The level of cholesterol in the β-lipoprotein fraction of the serum was primarily involved in the above changes. These findings do not support the view that the serum cholesterol level in man is a simple inverse function of the essential fatty acid content or of the degree of unsaturation of the fatty acids in the diet.

Effect of Dried Thyroid on Serum Cholesterol. Dried thyroid, 260 mg. daily and 325 mg. daily, produced a sustained fall in the levels of S_f 0–12, 12–20, 20–100, and 100–400 lipoproteins and of cholesterol in the serum. The higher the initial level of lipoproteins, the greater was the fall in that level under such treatment. "Escape" phenomena, previously observed with 195 mg. thyroid daily, were not observed with higher dosages. The large falls in atherogenic-index values for patients with high initial A-I values suggest that dried thyroid is worth considering as a prophylactic agent against coronary heart disease.

Diet Restricted in Refined Cereals and Saturated Fats. In parts of the world where atherosclerosis is common, the quality and quantity of the diet of the majority of the population differ significantly from those in countries where the disease is rare. Atheroma may possibly be caused by a high intake of: cholesterol, fat, calories, saturated fats (with relative deficiency of essential fatty acids), and degerminated carbohydrates (with deficiencies of vitamins and minerals). A diet restricting animal fats and degerminated flour, and with supplements of soy lecithin, soybean oil and flour, peanuts, and peas or beans, was successful in lowering the previously high serum lipids in atherosclerotic patients. The alleged atherogenic effects of fats in general, and of highly saturated fats (without cholesterol supplement) in particular, have not been confirmed by clearcut experiments. In Java, where highly saturated coconut oil is the main source of cooking fat, the incidence of clinical atherosclerosis is very low. To investigate whether saturated fats play a role in atherogenesis, data from such countries as France and Argentina, where the consumption of meat and dairy products is large and where unsaturated oils are used for cooking, should be compared with similar data from non-Western areas where coconut oil is the main source of cooking fat. It is unlikely that a diet which merely substitutes unsaturated for saturated fats can prevent atherosclerosis; therefore, our tentative diet appears to include other atherogenic factors in addition to essential fatty acids. The results are compatible with the hypothesis that high blood lipids in atherosclerosis are caused or maintained by deficiencies in Western staple food.

NURSING OUTLOOK

Vol. 5, February, 1957

* How to review a book. H. MacG. Hughes.—p. 82.

Book Reviewing. The conscientious book reviewer first reads his book and arrives at a sound notion of the work as a whole—what it is and how its parts are put together. Every author tries to get a message across to a certain audience. It is the reviewer's job to determine what the author's message or purpose is, and to whom the author is directing his writing. Report these findings at the beginning of the review. Next, the reviewer must be clear in his own mind about his personal aims and the desires of the reviewing audience. This principle of selection will insure his picking a book that will be interesting to those he addresses. Working within the author's self-appointed task, the reviewer should express a clear judgment of how well the writer accomplished what he set out to do. Is the scope as broad as the author stated it would be? Is the presentation of material adequate and the discussion of it suited to the tastes and capacities of the intended readers? A book review is essentially a judgment, not a summary. Any reviewer who succumbs to the easy summary and rejects the right of judgment has, in essence, given up the title of book reviewer. Some tips for reviewers include: selecting aspects of a book to present to a specialized audience; simplicity of writing style; avoiding "featherbedding." The best things are said simply and economically.

NUTRITION ABSTRACTS & REVIEWS

Vol. 27, January, 1957

* Secular change in height and weight of British children, including an analysis of measurements of English children in primary schools: 1911–1953. A. W. Boyne, F. C. Aitken, and I. Leitch.—p. 1.

Height and Weight of British Children. An analysis of height and weight of British children aged five, eight, and twelve years was made. The analysis shows clear upward trends of height and weight, and of the weight:height ratio over the time in review, with acceleration since 1945. The rate of increase is discussed in relation to year of birth, age, and sex. Maximum rate of improvement between one decade and the next has shifted upwards from pre-school (at age five) to school ages.

PUBLIC HEALTH REPORTS

Vol. 72, February, 1957

* Experience in preventing dental fluorosis by using low-fluoride bottled water. N. F. Gerrie and F. Kehr.—p. 183.

Bottled Water to Prevent Fluorosis. In this study, bottled water containing 0.2 p.p.m. fluorine was used by children in Colorado Springs during the development of their permanent teeth. The water supply of that city normally contains about 2.6 p.p.m. fluorine. Of the children on city water, 68.3 per cent developed fluorosis. Of those using bottled water for varying periods of time, only 37.5 per cent exhibited fluorosis. Many of the children who used bottled water still demonstrated objectionable fluorosis, probably due to irregular use of this water. The fluorosis index for the group on bottled water was 0.75. Defluoridation of the city water supply to 1.0 p.p.m. would seem to be a more effective means of preventing fluorosis than by bottling water.

THE ROYAL SOCIETY FOR THE PROMOTION OF HEALTH JOURNAL

Vol. 77, February, 1957

* Hygiene and sanitation in the fish industry. R. Spencer.—p. 41.

Hygiene and Sanitation in the Fish Industry. Bacterial flora of newly caught fish are generally nonexistent in the flesh and body fluids, but external surfaces, gills, and slime and, in the case of feedy fish, the gut, carry large numbers of bacteria. Fish starts as an extremely hygienic food but one which contains a considerable number of aprophytic bacteria capable of growing well at 32°F., the temperature at which it is normally kept before consumption or processing. Thus it is that handling practices at sea, transportation practices on land, and cutting, freezing, cold storage, salting, and smoking practices all become most important in the wholesome production of fish for market. To date, the incidence of food poisoning caused by fish and fish products which are the result of unhygienic handling shows that fish is one of the safest foods for consumption. This rarity of food poisoning is almost certainly due to the fish being kept at temperatures close to 32°F. to preserve its quality and to the fact that fish is generally well cooked before eating. One

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group of fish for which evidence of food poisoning due to spoilage has been accumulating is the mackerel-tunny group which, while perfectly safe to eat when fresh, may cause illness when spoilage has set in. None of the normal food-poisoning pathogens were found in poisoning incidents involving this group. Recent work has indicated that a substance distinct from histamine, but physiologically and pharmacologically very similar, may be responsible. This substance, a vagus stimulant, has been termed "saurine."

SCHOOL LUNCH JOURNAL

Vol. 11, February, 1957

* Here's how to use a power mixer and attachments. E. M. Cushman.—p. 6.

Power Mixer and Attachments. This article, which tells how and when to use the batter beater, wire whip, or dough hook and the correct speeds and timing for best results in mixing various foods, also reveals how to select the proper attachment for the job intended, and how to employ the best techniques in using the grater, shredder, and slicer plates as well as the chopping knives. It is recommended that all mixing start at slow speed and return to slow speed when finishing and that the bowl be filled to half capacity for best results. High speeds should be used with the slicer, grater, or shredder plate with the vegetable slicer attachment. In blending ingredients, a low speed should be used. Instructional recipes included in the article are: biscuit mix; mashed potatoes; slicing raw potatoes, onions, and carrots; slicing celery; preparing salad vegetables; shredding cheese; grating dry bread for crumbs; and chopping meat, cheese, and onions. Recommendations for purchasing and maintenance of equipment are also included.

SCIENCE

Vol. 125, February 15, 1957

* Time factors in protein biosynthesis. C. E. Dalgliesh.—p. 271.

Vol. 125, February 22, 1957

* Synthesis of amino acids by beta radiation. T. Hasselstrom, M. C. Henry, and H. Murr.—p. 350.

Vol. 125, March 1, 1957

* Blocked kynurenine pathway of tryptophan metabolism in hepatoma. J. Claudatus and S. Ginori.—p. 394.

Vol. 125, March 15, 1957

* Growth-inhibiting effect of irradiated tryptophan. H. M. Rozendaal, C. W. Gould, and M. T. Germain.—p. 492.

Amino Acids Synthesized by Radiation. The present investigation shows that ammonium acetate, on exposure to beta radiation in water solutions, forms, in addition to di- and tricarboxylic acids, small amounts of glycine, aspartic acid, and an unknown amino acid believed to be diaminosuccinic acid. Glycine would be the initial amino acid formed, whereas both of the aminosuccinic acids would be secondary ones.

Time in Biosynthesis of Protein. No evidence is yet available concerning the time required for biosynthesis of a single molecule of any protein. This article draws attention to the mechanistic significance, apparently often unrecognized, of this unknown factor.

Tryptophan Metabolism in Cancer. Tryptophan metabolism is related to niacin, which, like several of the B-complex vitamins, is reduced in tumor tissue. The urinary kynurenine excretion was found to be high in cancer patients on a high-tryptophan diet. Homogenates of normal liver, host liver, and tumor (hepatoma) were used to determine the tryptophan peroxidase activity and kynurenine degradation. The mean value of tryptophan peroxidase activity, expressed in micromoles of kynurenine per gram of dry tissue per hour, was 2.00 for normal liver, 3.91 for host liver, and 0.29 for rat hepatoma. The blockage of the ring opening and the blockage of the steps following the kynurenine pathway of tryptophan metabolism, reported in this paper, indicate, in tumors, a marked decrease of tryptophan metabolism via kynurenine.

Irradiated Tryptophan Inhibits Growth. In an attempt to obtain competitive inhibitors, crystalline L-tryptophan has been irradiated. It was found that irradiated tryptophan contained one or more compounds that were capable of inhibiting the growth of *Streptococcus mastitidis*. The isolation and identification of this compound has not yet been done.

UNITED STATES ARMED FORCES MEDICAL JOURNAL

Vol. 8, March, 1957

* Experiences in providing salad vegetables to American forces in Japan. L. P. Frick, G. L. Orth, N. O. Wilson, W. F. Malizia, and R. O. Anslow.—p. 406.

Salad Greens for U.S. Forces in Japan. Fear of gastro-intestinal infections among the U.S. Armed Forces and their dependents in the Far East has resulted in elaborate precautions to avoid such diseases. Soil testing in the laboratory and setting up standards measuring the amount of contamination by night soil (human excreta) made possible the eventual utilization of certain Japanese farms which met the requirements of the U.S. Army testing laboratories. Japanese public health records show that diarrhea, enteritis, and ulceration of the intestine have been leading causes of death in Japan since 1900. The problems experienced by the Japanese with intestinal diseases have been, in general, great. Incidence of disease is highest in the farm areas, lower in the cities. While occurrence of parasitic infections in the Japanese seems to remain constantly high, incidence of disease in American troops and personnel, by comparison, is low. This low incidence is credited to the controlled production of vegetables served to the troops. Experience with a general food procurement program implemented in early 1955 has demonstrated that with well conceived and properly executed sanitary standards, it is possible to develop a safe supply of Far Eastern salad vegetables on a scale sufficiently large to be practical and at the same time, to eliminate much unwarranted concern.

ADULT LEADERSHIP

Vol. 5, March, 1957

* Hints on how to attend a conference. B. Carstenson.—p. 267.

Attending a Conference. Veterans of many conference sessions give hints on how to insure well spent conference-time. Before the conference, find out its general purpose. Pre-think your own interest and needs so that the conference will be more productive for you. Pre-register and leave your time schedule as free and flexible as possible. Stick with your discussion group; each time you switch groups you lose time. Don't hesitate to speak up. Aid the discussion leader in keeping one or two persons from dominating. Don't overlook the social life of a conference as an opportunity to meet people and learn things. Don't be afraid to ask persons with important sounding titles for advice on your problems or interest.

AMERICAN RESTAURANT MAGAZINE

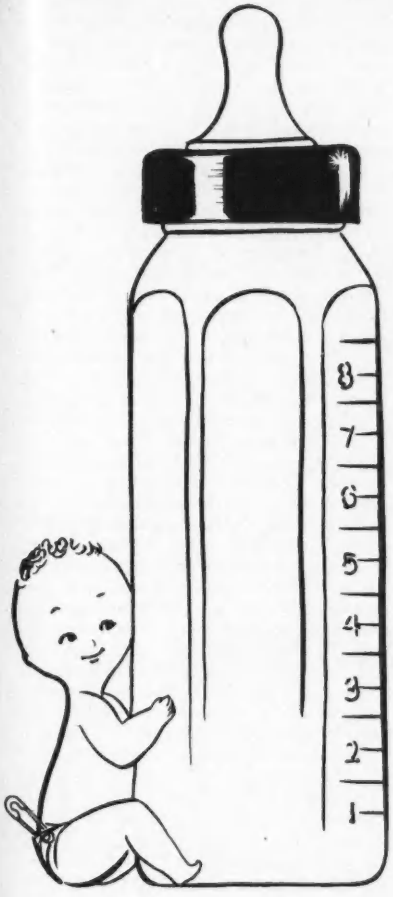
Vol. 41, February, 1957

* Plan your kitchen on paper. R. R. Iuen.—p. 83.

Vol. 41, March, 1957

* A new look at 5 restaurant factors. G. L. Wenzel.—p. 108.
* Facts you should know about fats.—p. 134.
* Facts you should know about batters-breading.—p. 134.

Kitchen Planning. Scaled templates of equipment and a scaled sheet of paper that can be used for laying out a restaurant kitchen are provided on two perforated pages of this article, making it a simple matter to put the kitchen on paper. The author recommends in planning the kitchen that the basic operational policies be determined, a plan of the available space be drawn, and the layout be made to scale with the templates. Changes and experiments may be made by moving the templates around the scale plan. When a satisfactory layout is achieved, the proposed plan should be drawn up and turned over to a consultant to prepare finished working drawings. The advice and services of a food service equipment consultant should be obtained if the layout is elaborate. Points on planning the kitchen include: situate the main kitchen so that the flow of work and food will move in one direction without back-tracking; areas for the disposal of waste, potwashing, dishwashing, and office space must be provided; toilet and locker facilities should be nearby. Special points on specialized kitchen areas are as follows: The receiving area must be large enough to accommodate a platform scale, desk or table, and a platform truck. The storage area should be adjacent to the receiving area and provide adequate space and refrigeration, plus shelves for supplies and wood or metal pallets on which case goods can be stacked. The pre-preparation area should be located between the storage and cooking areas. It should include a sink and table for meat preparation, a double sink for vegetable preparation. The preparation area itself should provide space for cooking, baking, and salad



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making. These facilities must be located between the pre-preparation and serving units and should be centrally located so that food can be transported easily. Each should be separated but not closed off. A list of equipment requirements is included for each area. Because dishwashing is the noisiest unit in the kitchen, it should be closed off and located as far as possible from the dining area, and soiled dishes should be returned to the area by mechanical means. Pot and pan washing facilities should be near the cooking and baking area.

Five Restaurant Factors. Closer control of operating variables through quarterly price and portion cost control guides is the subject of this article. An integrated system of control bringing together the five factors of supply, demand, cost, price, and volume in a quarterly published report is cited as very helpful. This guide lists all the best-selling menu items divided into à la carte and table d'hôte items, and all the raw ingredients with current wholesale prices. It contains all recipes on which portion costs are based. Guide recommendations on pricing suggest that comparison is outmoded. Most important is that service, food, and atmosphere are good. If they are, customers will be willing to pay for honest service performed. Volume follows good food, cheerful surroundings, cleanliness, clean rest rooms, reasonable prices, and satisfied smiling employees. If the above conditions are in effect, a volume of $15 a day per seat is an excellent indication.

Facts on Fat. Fat or shortening used in deep fat frying functions in three ways. It serves to transfer heat to the article to be fried, adds nutritive value and flavor to foods. Fat is like all organic substances. It deteriorates or breaks down when excessive temperatures, moisture, air, and the presence of carbonized crumbs persist. A smoke-point table for fats accompanies the article, along with suggestions for handling cooking fats efficiently.

Facts on Batters. Ready-prepared mixes for batter dipping and breading are very economical because they absorb over 30 per cent less fat and use up to 127 per cent less breading. They also cut down on time and labor. Advantages over old-fashioned batters and breadings include: crisp and non-greasy frying, delicate coating, no popping and cracking, extra flavor and attractiveness. Portion costs can be figured to a fine point because price is stable.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 22, February, 1957

* Student hangout at K. U. F. Burge.—p. 54.

Vol. 22, March, 1957

* Building a food service budget. T. M. Rehder.—p. 53.

University Restaurant. A correct merchandising policy is credited as the instrument of success for a university restaurant in the Midwest. Great attention was given to the type of service, speed, turnover, menu selection, house specialties, and carry-out service as well as atmosphere while in the drawing board stage. Highly efficient food production and service areas were planned to provide for constantly increasing enrollment and to insure a sound economic operation. The continuous forward flow principle was employed. In no case does an employee do any unnecessary moving about to get materials. Since peak loads of 15 customers per minute were anticipated, the dining area was laid out to make maximum use of floor space—440 seats in 4200 sq. ft. Furnishings are on a modest scale to make this arrangement possible. Variability of traffic and various special functions, such as banquets, demanded flexibility in table arrangements and service. By a simple reversing of customer approach and by placing tablecloths and place settings on tables, a handsome dining room with buffet service results. Limited funds necessitated the use of old furnishings which were remodeled inexpensively to fit into a warm, modern atmosphere. At the service bar, microphones are placed close to the menu so that the customer can order any "short order" item he may select. Most such orders are ready by the time the customer arrives at the revolving lazy Susan which displays salads.

Building a Food Service Budget. Building a food service budget calls for thorough review. It means thinking through the complete year's operation on a day-by-day, week-by-week, month-by-month basis for each operating unit of the food service, and it means a careful review of last year's operations. A rundown of the thinking and some of the mechanics in building a contract feeding food service budget are presented on the following points: (a) determining the actual days of operation for each month, and the daily credit or allocation per person to the food department, for income; (b) summer session income; (c) conference, convention, or workshop income; and (d) unclassified income for miscellaneous items. The expenses over which management has control, namely, food cost, labor costs, and general expense items as well as expenses over which the manager has little control, such as utilities, equipment replacement reserve, building repair reserve, administrative overhead, and departmental administrative costs, are discussed. Public cafeterias, soda fountains, and canteens are also taken into consideration. Two charts presenting a sample food budget for a women's and a men's residence hall are included.

FOOD ENGINEERING

Vol. 59, February, 1957

* Quick-serve meals for the Army. R. G. Tischer.—p. 64.
* Just how reliable is pH as a guide to food acidity? A. W. Noling and J. H. O'Brien.—p. 88.
* Nitriting curbs rust on cans. J. R. Marshall.—p. 99.
* Technique ups quality, shelf-life of pre-peeled potatoes. E. E. Anderson and C. Zapsalis.—p. 114.
* Reveal objective tests for frozen food quality. F. K. Lawler.—p. 125.

Quick Army Meals. Prime objective of experienced Quartermaster planners is the quick-serve meal—lower in weight and volume, higher in capacity to maintain soldiers in the top form needed to win battles. A main item for the projected food program is a twenty-five-man uncooked meal ready for preparation and serving. Such a meal can be used as far forward as cooks, water, and a minimum of heating equipment are available. In the contact area, the fighting man opens and eats improved cold meals. These usually consist of dehydrated dishes, such as chili and beans, chicken and rice, instant rice, and pasteurized fruit mix, bread, jam, margarine, and drinks. Packaging is in paper and plastic rectangular containers with trays and spoons for added quick-serve convenience. The individual, meal-type "C" ration consists of a random selection of canned and dehydrated items combined to increase flexibility of use in the field. Examples of primary food components used are: canned pineapple, boned chicken, fried ham, and beans with frankfurters. Chocolate fudge bars, coffee, cream, sugar, and gum are also included in the ration. The goal in assembling the rations is the greatest taste satisfaction possible while entailing the least distraction from the soldier's job of fighting. No heating of the foods is required. The new quick-serves utilize available dehydrated foods in combination with new freeze-dried and dehydrated foods. This type of meal requires cooking, although some of the items can be eaten cold. Work has been going on to precook dehydrated foods so that they could be prepared hot and instantly by the field soldier using elementary equipment and water. These precooked rations would be packaged in easily transportable containers made of plastic and paper-stock materials. It is predicted that troops would find them acceptable for ninety days (the twenty-five-man meal) and thirty days (precooked dehydrated rations).

Is *p*H a Reliable Index? *p*H must be interpreted properly or the results will confuse rather than inform. Actually, studies now show that ingredients other than acids greatly influence *p*H readings, thus minimizing their value. It was found during a test series on soft drinks that the presence of carbon dioxide as well as total alkalinity has a definite bearing on *p*H of soft drinks. Tests for *p*H and total acidity when carbon dioxide gas is present and the drink is effervescing are of questionable accuracy. In the case of highly concentrated acid solutions, *p*H comparisons are not very reliable when tartaric, citric, and phosphoric acids are employed in the same concentration. Each of the acids will show a different *p*H in the beverage. Juice and buffer content, type of acid, amount of acid, and preservative content, all contribute to the final *p*H and total acidity. Substitute sweeteners and cyclamates have little effect on the *p*H or acidity.

Nitriting Curbs Rust. Adding sodium nitrite to hot water in the canning process can be of decided value as a rust inhibitor. It will protect processing equipment from corrosion and will re-

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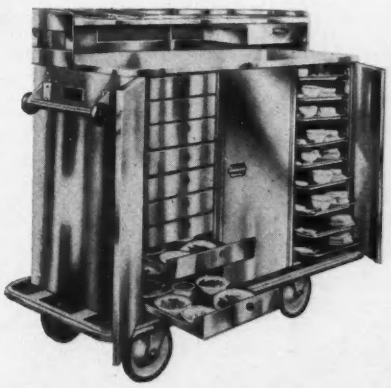

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tard the formation of rust on the exterior of cans. This nitrite is not a cure-all, but it will retard rust formation in normal commercial operations, thus increasing feasibility of the use of lighter tin-coating weights. The agent did not prove successful in use with a short-time high-concentration dip. With sodium nitrite in concentrations below 200 p.p.m., there is pitting of ferrous metals. Above 200 p.p.m., no rust appeared on tin strips during the four weeks of testing. Excessive amounts of sodium nitrite do not give significantly better results, hence careful control of its concentration in the water will mean savings as well as prevention of the dangerously low concentration occurring through steam evaporation. The agent cannot be used in solutions having a *p*H of lower than 6.5 because it decomposes. Using the agent in citrus canning eliminated fruit-sac black marks. Tests in a pimiento packing plant showed that the nitrite eliminated spangling of cans. The actual mechanism by which the nitrite stopped the etching is not yet known. Storage for ten months of pimiento cans did not affect the cans treated with the nitrite. Cans not treated were rusty. Experiments to date using sodium nitrite dips to prevent corrosion during steam plating have not been encouraging.

Technique to Improve Potatoes. Markedly lower levels of sulphite may be used to inhibit discoloration when potatoes are packaged in Cryovac, with vacuumizing and heat-shrinking of the container. Thus treated and packaged, pre-peeled potatoes might be suitable for retail marketing. And for portion control, several individual bags could be packed in a master container. Treated with 600 to 2000 p.p.m. sulphite and held at 35 to 40°F., potatoes are saleable after ten to sixteen days. And with ascorbic acid concentrations of 1.3 per cent, storage life ranges from ten to thirteen days. Use of lower sulphite levels tends to curb "weeping" of potatoes in storage. However, treatment with ascorbic acid avoids the detrimental effect of sulphite on the product's natural thiamine content. Through use of vacuum packaging in plastic films, it was expected that storage time comparable to conventional processing (up to three weeks) might be obtained, even though this sulphite level is cut substantially. Testing for relative keeping qualities of pre-peeled potatoes, vacuumized Cryovac packages had been opened and both sulphite-dipped and ascorbic acid-dipped potatoes discolored within an hour.

Tests for Frozen Foods. Research on strawberries has shown how to measure the amount of abuse suffered by a frozen product and to determine how much high quality life remained. When 6 per cent of the fruit acid is lost, off-flavor and discoloration begins to be noticed. Thus a chemical test for the acid reveals how much quality has deteriorated. It is not necessary to know how much ascorbic acid the berries contained originally, for the sum of the acid and its first two oxidation products remains constant. The same test can be made for raspberries. But it is more convenient here to measure the extent to which the red color of the berries is equalized out in the sirup. Chlorophyll is the handiest quality indicator for peas and beans. A thaw index for frozen fruits shows that after a day or two of defrosting, sugar concentration in the sirup is the same as in the fruit. Normally, the former is higher. Time and temperature are still the big troublemakers. Temperatures must be uniformly low to maintain quality of the product; 0°F. was cited as adequate. Fluctuating temperatures have the same effect as their steady average and the order in which different temperatures occur has no significance.

HOSPITAL PROGRESS

Vol. 38, February 1957

* Training dietary technicians. Sister M. E. Shaughnessy.—p. 77.

Training Dietary Technicians. In an era of shortage of professionally trained personnel, a well planned training program set up in the dietary department can prove to be a great benefit to the hospital in producing competent non-professional technicians. To train the technician adequately, Mercy Hospital, Hamilton, Ohio, set up a five-week basic course which included instruction in diet therapy, special training in visiting patients, and the basic rules of serving food. The non-professional technician beginning her regular work follows a carefully planned schedule which, starting in the morning with the serving of the breakfast tray, proceeds through the day with a variety of selected tasks to end in the evening with the serving of the dinner tray. The chief technician follows through, checking the activities of each technician. The therapeutic dietitian also supervises the work of the technicians on the floors. Benefits from the new training system have been many. Especially noted were better patient relationships; a marked improvement in patients' dispositions; more efficient food control; relief for the nurse. Doctors, too, are pleased with results: they no longer order high-vitamin or high caloric diets for their patients because they are assured they will get what they want to eat.

HOSPITALS

Vol. 31, January 16, 1957

* We cook with microwaves. E. R. Frank.—p. 77.

Vol. 31, February 16, 1957

* Cut down steps and step up efficiency. M. L. Clippinger.—p. 74.

Vol. 31, March 1, 1957

* How to communicate ideas. R. L. Titus.—p. 70.

Cooking with Microwaves. In hospitals of the Kaiser Foundation studies have been made assembling raw food on plates, seasoning it, and cooking it on the plate in a microwave oven. A covering over the plate is required to prevent dehydration of the food items after they are assembled on the plate. A transparent wrapping that adheres to the underside of the plate was used. Food flavors are not transferred from one item to another on the plate. A degree of pre-preparation is desirable on meats, potatoes, and certain vegetables. It was found that meats, fish, poultry, and browned potatoes did not receive the customary browning. Boiled and baked potatoes, fresh vegetables, frozen Lima beans, and asparagus and a few other items require a longer cooking time than is desirable for other items on the plate. The experiments were so successful that microwave cooking has been adopted in three of the Foundation's hospitals. The routine followed is described. Patients' reaction to this type of food service has been very good. They have expressed their appreciation in receiving hot, tasty food. The color and texture of the food have been very satisfactory. By using microwave cooking, a better yield from meat items has been achieved. A saving in raw food costs of 3.3 cents per meal served, and a saving in total food costs (labor and raw food) of approximately 8 cents per meal has been realized.

Food Service, Dietetics, and Efficiency. Flow process charts are found to be effective tools for finding quicker and better ways to do a job. These charts pinpoint equipment needs and unequal distribution of workload. They make it easier to see back-tracking, proximity of one work station to another, duplication of effort, and potential sources of accidents. A flow process chart is a diagram which shows by means of dotted lines, the relative movement of employees and material through work units. Process charts can be used effectively to determine equipment needs and graphically show the procedures and equipment necessary in preparation of each menu item. They will also reveal unequal distribution of working loads, overstaffed stations, and understaffed areas. The article is accompanied by several flow process charts.

Successful Dietitians Must Communicate. The four phases of organization which are most important in developing a successful dietary department are: communications, records, personnel, and supervision. Extremely important is getting ideas across to an administrator. To do this, the dietitian must state all pertinent information clearly. She can use sketches, charts, and written proposals to illustrate and illuminate the idea and bring the administrator into a responsive and attentive point of view. She should use well chosen and logical arguments to defend the idea critically and intelligently. Comparative cost reports, a graphic report of savings in labor, projected income reports—all these can be used. A dietitian must be able to compromise with an alternate solution. She must be able to obtain cooperation and work with other supervisors. Mutual trust, confidence, friendship, common goals, and respect all aid in the smooth interaction of supervisory personnel and the dietitian should cultivate these assets to facilitate communications on all levels. Breaking down barriers of hostility, such as those sometimes existing between the nursing and dietary departments, is a challenge to the dietitian. From the various reports in her department the dietitian can make very at-

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tractive charts showing where interdepartmental overlaps exist. By presenting these to the head nurses' meeting, she can show what she can do to help them. Communications and good public relations can be, and should be, carried on in the employee cafeteria through the service of attractive, well balanced meals. It is carried on with every patient who is educated to sound nutritional practices.

INSTITUTIONAL FEEDING AND HOUSING

Vol. 8, March, 1957

* Rice has a place on every menu. E. Blair.—p. 14.
* Purchasing for profit. R. A. Seelig.—p. 32.
* How to pick your supervisors. C. Blackburne.—p. 34.
* Remove floor stains safely. P. Patterson.—p. 46.

Rice. The fluff method of cooking, combining 1 cup rice with 2 cups water and 1 tsp. salt, is the best recipe for achieving fine rice. When monosodium glutamate is added (1 Tbsp. to 5 lb.), the delicate flavor is enhanced. Lemon juice can be added to retain whiteness. The one-to-two method of cooking steamed rice is given in a recipe scaled to 25 and 100 portions. Suggestions for serving and menu combinations are also presented.

Buying Avocados and Cooking Greens. Avocados are available in good volume all year round with peak supply in March and April. Points to consider in selecting are listed as follows: avocados should be heavy for their size, bright and fresh, and either green skinned or purple or black. The California Fuerte should weigh from 8 to 16 oz., have a thin, pliable, leathery skin, be pear shaped, and be green in color. The Florida Lula should weigh 14 to 24 oz., have a smooth or slightly corrugated skin, be pear shaped and green with yellow flecks. Shipping and grading information is included in the article. The author mentions that avocados are ready to eat when they yield to gentle pressure. Cooking greens are on the market all year, with March yielding spinach, kale, endive, collards, mustard, and turnip tops. In buying, demand freshness and tenderness above all. Examine for bruising, crunching, or large coarse stalks and stems. Because leaves heat in their packages, they should be iced well if they are not to be used immediately.

How to Pick Supervisors. Establishing and maintaining a sound chain of command calls for careful selection. Management should consider the qualifications of a manager carefully. A thorough background in the food service business, including experience equivalent to that of a manager in a similar operation with the same type of clientele, is highly desirable. The manager's responsibilities should include: menu planning, service standard, all purchasing, maintenance supervision, sanitation, finance, public relations, and training. To develop teamwork the manager should choose his own supervisory personnel.

Floor Stains. This is a complete guide to floor stains, removal preparations, and application. It includes instructions for dealing with alcohol, burns, carbonated beverages, chocolate, coffee, chewing gum, fruit and fruit-juices, oil, grease, paint, and varnish as well as traffic marks.

INSTITUTIONS

Vol. 40, March, 1957

* Elements of good supervision. S. M. Hartt.—p. 28.
* Practical approach to employee training.—p. 47.
* Dishonesty takes many subtle forms. F. L. Mino.—p. 56.
* Making refrigeration work for you. Part V. C. K. Litman.—p. 124.
* Rules for orienting a new employee. V. W. Eimicke.—p. 129.
* Help workers work easier. L. H. Kotschevar.—p. 135.
* Patrons want calorie-counted menus.—p. 147.
* The egg—and you. A. M. Macfarlane.—p. 151.

Good Supervision. The major problem in student union management is to obtain an adequate staff and to keep their morale high. To do this, the author suggests that a listing of tentative staff be made, and an example is given. To keep the staff, it is suggested that studies aimed at simplifying and improving single operations be delegated to the personnel. These projects will serve the department well and keep sub-supervisors satisfied with a feeling of self-directed accomplishment. Top supervisors should train and advance existing sub-supervisors and assistants. This way, supervisory skill will increase, and all-round morale stay high.

Employee Training. High turnover, absenteeism, careless service, and disinterest are credited to lack of pride on the part of the employee in his job. To alleviate this condition, the author recommends that restaurants set up a code of personnel relationship procedures and an adequate system for on-the-job training. A primary part of the code would be the initial screening and hiring interview. Here is where the individual trained in personnel relationship methods can save payroll dollars and man-hours spent in futile training. Extra people carried on the payroll eliminate the emergency situation which necessitates hiring the first person who walks in the door and should be considered as a possible long range money-saving procedure.

Dishonesty. Expense control is discussed with special reference to the honesty of administrative employees. Because no employee can be expected to have the same interest in a business as is held by the actual operator, it is important that management adopt a program of continuous and unwavering attention to operational control. Receiving, storing, issuing, and serving procedures must be proper, controlled, and checked continuously. It is only possible to achieve a food profit through watchfulness and ability to get employees to do a good job.

Refrigeration. The author maintains that a good knowledge and understanding of the installation and maintenance instructions accompanying refrigeration units will pay off in three ways: by increasing the life expectancy of the equipment; by eliminating breakdowns; and by enabling equipment to be repaired quickly without costly interruption of service. Equipment should be installed permanently after a close examination on delivery for any possible damage. Proper handling at this point will add to the trouble-free useful life of the product. Good plumbing, electrical, and refrigeration work at installation, plus a firm floor are essential. A last minute check before running the equipment can avoid costly errors and serious damage. A maintenance program based first on cleanliness will further prolong the equipment's life.

Orienting New Employees. The object of the orientation program is to make the new employee pay his way as soon as possible. This is best accomplished by using a checklist which includes all points important in the individual operation that should be covered with a new employee. A sample check list is presented, along with suggestions to implement the important steps in orientation training.

Helping Workers. Good air, light, color, and general working conditions can help workers avoid fatigue and produce more with less energy expenditure. Good working habits, outlined in detail with their physiologic reasons to explain why and how energy is economized, are presented. Among many environmental factors, poor work heights were cited as energy drainers. To test for efficient work heights, have the worker stand next to the work table or desk and press his hand down flat. If this can be done with the arm fully extended but not stretched, the table is the proper height. Applying the natural, most efficient, and easiest methods of motion to each task will save workers from abnormal fatigue.

Eggs. The versatile egg is discussed in detail from purchasing to preparation. The economy, popularity, and nutritive superiority of eggs are shown, and tables for careful purchasing are provided to show proper weights by size. Recipes for puffy omelets, French omelets, and soufflés give the egg a starring role. Main dishes and cakes, frostings, and meringues are also discussed. Recipes for several of these are presented.

THE MODERN HOSPITAL

Vol. 88, March, 1957

* The news about nutrition is encouraging. P. P. Logan.—p. 112.

New Food Developments. The author, Director of Research for the National Restaurant Association, reviews developments in agriculture, food processing, and marketing and handling which will ease the administrative task of the dietitian. New agricultural products have been developed from research, i.e., the broad-breasted bronze turkey and Santa Gertrudis cattle, which are a cross between the Brahmin and the Short Horn. In the field of food preservation, developments have come thick and fast, with the introduction of antibiotics, antioxidants, dehydration, dehydrofreezing, freezing, irradiation, aseptic canning, and so on. Technology has

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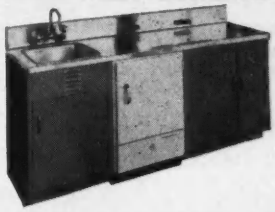

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Address_____

City_____ Zone____ State_____

also been applied to the field of harvesting and marketing, so that today fresh produce is packed in the picking field and rushed to lower temperature storage areas to reduce spoilage to a minimum. Such developments mean to the food service industry that most of the preparation prior to cooking food will be on a mass production basis in modern factories close to producing areas, that there will be fewer employees in kitchens, and that per-man-hour production rate will be doubled with less physical effort and greater pay. What about the future? The author predicts that science will study methods of cultivating more of our indigenous plants for food purposes and that new foods not yet visualized will be available for human welfare. He also believes that research will be accelerated in the field of heat transfer, including microwave and infra-red cookery, and even ultrasonics (high frequency sound waves). Consideration and proper use of the changes of our era must definitely be made part of the thinking of anyone who aspires to business success today and tomorrow in The United States.

PERSONNEL JOURNAL

Vol. 35, February, 1957

* Employee opinion surveys: making and using them. G. B. Arthur, Jr.—p. 333.

Employee Opinion and Improved Supervision. There is a proved relationship between productivity and the way a supervisor leads his people. Employee opinion surveys are excellent tools for determining how good each supervisor is as a leader and where his performance can be improved. The best way to use employee opinion surveys is in a positive way. Do not use survey results to tell a supervisor where and how he must improve. Create a training class and allow each supervisor to explain that part of leadership responsibility which he assumes and executes best. Have the men discuss each method extensively. This way the men who rate highest in individual areas give the benefit of their knowledge to those who are deficient, and, those deficient in one area in turn give their views of leadership techniques in different areas. No one is called on the carpet, and the training program becomes effective. Graphs showing how to take an employee survey accompany the article.

RESTAURANT MANAGEMENT

Vol. 80, March, 1957

* Fresh vegetables make attractive leftovers. A. Goldsmid.—p. 44.
* For the calorie watchers. A. Eiss and G. Eiss.—p. 51.
* Uncovering employee dissatisfaction. E. Fair.—p. 80.

Attractive Vegetable Leftovers. As an extra touch in soups, surplus (left-over) fresh vegetables can be used to provide a better flavored richer stock. They may also be well used in stuffings, salads, soufflés, creole and au gratin dishes. Many suggestions and several recipes reveal how to utilize leftovers to best advantage.

Calorie Watchers. Low - calorie meals can be attractive, flavorsome, and profitable, and it is not necessary to turn the restaurant into a diet kitchen to prepare such meals. Simply make up a file of basic menus that can be varied easily with substitutions and follow a few simple rules. Broil or bake, instead of fry. Go "light" on the butter in vegetables. Avoid creamed soups and sauces. Serve large portions of meats and vegetables, small portions of desserts. Trim excess fat and skim soups. Then, be sure all foods are flavored to perfection.

Employee Dissatisfaction. Dissatisfaction keeps efficiency low and raises the cost of operating a restaurant. In the interest of the business it is up to the manager to uncover dissatisfaction in its early stages. Four symptoms of approaching disruption are: lack of interest in the work, lack of discipline, lack of cooperation in general, and non-participation in activities of other employees. With discipline problems, a new employee may be the source of trouble. Lagging interest can be speeded up if the employee is given a better picture of how his work fits into the overall pattern. Preventive investigation of working conditions and rules which might conceivably cause trouble is a wise measure. A standard check sheet of all such possible and existing areas could be used as a guide every six weeks.

Nutrition Problems and World Population Growth

That "all flesh is grass," as the Bible says, was one of the points made by Professor George Borgstrom, Michigan State University, when he spoke recently to the staff of the U.S.D.A.'s Eastern Regional Research Laboratory in Wyndmoor, Pennsylvania.

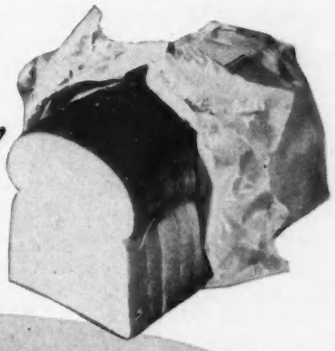
In his talk on "Some Overlooked Nutritional Aspects of World Food Problems," Professor Borgstrom showed that the biblical statement is a physiologic fact as well as a statement of spiritual value. He views the human race as a crop derived from the land, since virtually all of its nutrition comes from the green plants, either directly or through the animals and their products which it consumes. Dr. Borgstrom pointed out that protein, the indispensable life substance, is tied partly to nitrogen and partly to sulphur.

He analyzed in detail the facts limiting the production of protein, and nutritionally speaking, presented a gloomy view of the world's future. He declared that, while it is true that only a small fraction of the energy produced by plants in photosynthesis is now actually converted to human energy through digestion, still it will be difficult for the world's population to derive much more nutrition from nature.

Upward trends in the world's population lead Professor Borgstrom to foresee a seriously lowered nutritional standard for the future. He expressed doubt that the United States, if it continues its present population expansion at the rate of 3 million a year, will be able to maintain for long the high nutritional standard it now enjoys.

Dr. Borgstrom, a native of Sweden, has participated in several international congresses on world feeding problems, and is now translating into English his book, *The World Our Destiny.*

The Well-Balanced Nutrients in Enriched Bread



Equally Important in REDUCING Diets

The maintenance of an optimal nutritional state in the face of a sharp curtailment of caloric intake makes it mandatory that the daily diet satisfy all requirements for protein, vitamins, and minerals. Thus all foods present in normal diets, including meat, poultry, fish, eggs, dairy products, vegetables, fruits, and enriched and whole grain products, may be represented in the reducing diet.

The enrichment nutrients of enriched bread are selected qualitatively and quantitatively because of their importance in everyday nutrition. These nutrients have proved especially important in restricted diets.

Though relatively low in calories (only 63 per slice), enriched bread contributes noteworthy amounts of biologically valuable protein, the B vitamins thiamine, riboflavin and niacin, the minerals iron and calcium.

The average contribution per slice—protein 2 Gm.; thiamine 0.06 mg.; riboflavin 0.04 mg.; niacin 0.56 mg.; iron 0.6 mg.; calcium 21 mg.—merits the inclusion of enriched bread in the reducing diet, and—through the number of slices included—helps in assuring adequate intake of these essentials.

Fresh or toasted, or in sandwiches, enriched bread affords eating satisfaction so essential for making any reducing regimen tolerable over the long term usually required.

AMERICAN BAKERS ASSOCIATION
20 NORTH WACKER DRIVE • CHICAGO 6, ILLINOIS

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

40th Annual Meeting—October 22–25 1957

Florida Keys Unlock Doors to Sand and Science

FLORIDALAND—Part I

The Lure and Lore of Remarkable Miami

WHEN THEY THINK OF FLORIDA, most people think of Miami Beach, that remarkable strip of land which is the first of the Florida Keys. Miami Beach has built, since World War II, more hotels than the rest of the resort world totaled. It has built them into a highly organized play city offering every type of entertainment man craves.

IT WASN'T ALWAYS LIKE THIS. Not many people before the boom days thought Miami inspiring, although long before the arrival of Columbus the Calusa Indian found the beach an ideal place to worship the sun.

MYTHOLOGY TELLS US that a race of sun-drenched giants were supposed to live on the peninsula. Ponce de Leon thought Florida might give him gold and slaves. The Spanish, the English, and the French all laid claim to the "sweet water," the "big water," and the magic which the Indian name "Miami" describes. But the new American nation finally got and kept her.

IT TOOK A NEW RACE of super financial giants to bring Florida out of the doldrums and connect her vitally to the mainbody of America. These financial wizards were Yankees, and they came south among the Conches and Crackers to change the fabulous network of lush swamps into the greatest tourist attraction on the eastern seaboard.

WOMEN AND A RAILROADING MAN brought Biscayne Bay to life. When the big freeze of '94–'95 ruined the citrus groves of west and north Florida, Mrs. Frederick Tuttle and Mrs. William Brickell, prominent residents, pushed hard to bring the railroad to the south. "There's no frost here," said Mrs. Tuttle, and the railroading man saw she was right.

HE WAS HENRY M. FLAGLER, partner of John D. Rockefeller, and he brought the first train in, loaded with building supplies. But Flagler was not content with the Florida East Coast Railroad. He must connect the very Florida Keys. So he built the overseas railroad and bridged with rails the watery gaps that lay between key and key. While he slept in Captain E. Vail's floating hotel, he dreamed of bringing Key West to Miami. His silver rails would cross the Atlantic water south and come at last to rich Key West.

BUT WHEN HE GOT THERE, after years of work and crushing difficulties, it turned out Miami didn't need Key West at all. Because Miami had somehow boomed, she stood on her own two feet.

RAILS LINK THE PAST TO THE PRESENT. Today you can look for treasure, scour the magnificent beaches for the gold hordes of such notorious pirates as Kidd, Drake, Hawkins, Sprigg. You can sail, fish, golf, shoot, or watch jai-alai, that fast, furious and dangerous old Spanish sport said to have evolved from a game played with bare hands batting a hard ball against the wall of a village church.

YOU CAN SEE THE INDIANS WRESTLE CROCODILES. You can see snake charmers charming snakes, too, if you like that sort of thing. There are plenty of both in the Everglades . . . reptiles and lush plant life surround the reservations of the Seminoles. These Indians still follow the tribal laws out in Big Cypress Swamp. And they still proudly disclaim relationship with the white men who treated them so badly.

YOU CAN FOLLOW NATURE inland to Parrot Jungle, a colorful bower of tropical planting and rare birds; or to Monkey Jungle where lives a free colony of monkeys who have turned the tables on caged visitors. You can see the flamingos at Hialeah and drink in the beautiful colors of Orchid Jungle.

THE DELIGHTS OF THE EVERGLADES, of the purple gallinule living in its natural habitat, the crocodile, ibis, and roseate spoonbill—all can be taken in an overnight trip that costs around $20 with a stop at a comfortable motel on the Keys included. These sights are as much a part of Florida as glamorous, glittering Miami itself.

MAL DE BROCHURE

Over-long preoccupation with travel folders can have a most impractical, devil-may-care effect on conservative persons.

If you expect to combine a vacation with your trip to the Annual Meeting, allow your travel agent to engulf himself in the buoyantly zestful brochures. Cherish your equanimity. Keep your eyes averted.

If you allow yourself even a few surreptitious peeks into the insidious betrayers of common sense, prepare yourself for anything. You may find yourself becoming a conchologist, that delightful deviation of a beachcomber who specializes in collecting colorful conch shells on the Florida Keys.

It may be within the realm of your imagination to "rent a clean, strong skiff, with or without a motor" and head for the Gulf Stream for an engagement with a dolphin, marlin, or amberjack. Another diverting suggestion is that of "driving your car over both the Atlantic Ocean and the Gulf of Mexico at the same time!" This excursion proves to be less hazardous than first imagined, for it develops that bridges link the many islands of the keys.

You may find yourself forgetting your journeys through the avenues of exhibits at the Auditorium and gleefully planning post-convention walking tours through San Juan or Ciudad Trujillo.

Watch it, or you may be enveloped by an eerie sensation of being wafted away from deep fat fryers and disposal units. Still in this state of detachment, you may find yourself languishing on the sands of Barbados, Saba, or St. Croix—awakening to the awful realization that you have missed the very finest Annual Meeting ever held.

From these enticements, you can readily see that travel folders may serve a purpose, but that they should be portion controlled.

ANNUAL MEETING ALUMNAE MEALS

The Alumnae Meals Committee for the 40th Annual Meeting of A.D.A. in Miami will be pleased to make arrangements for mealtime reunions of college alumnae and dietetic internship groups. The reunions are scheduled as follows:

Tuesday dinner, October 22—colleges and universities
Wednesday dinner, October 23—dietetic internships
Friday breakfast, October 25—dietetic internships

The name of the group, its designated chairman, and the approximate number expected should be sent to: Ruth Pontius, Dietetic Service, Veterans Administration Hospital, Coral Gables 34, Florida.

No group reservations will be accepted by Miss Pontius after August 20.

HOUSE OF DELEGATES MEETINGS

For the convenience of delegates who must limit their stay in Miami, the House of Delegates will meet all day Monday and Tuesday morning. Previously the second session has been held on Thursday.

WINGING IN ON A BUDGET

Your trip to the Annual Meeting can be tailored in several ways to harmonize with your budget.

Coach flights are offered by all the major airlines which serve Miami and by other lines which carry passengers to junction points, such as Chicago, for transfer to Florida planes.

Some of these airlines have arrangements with excellent Miami Beach hotels which permit extremely low rates for a specified number of nights. For instance, Eastern Air Lines has an agreement, called Plan I, with eight highly acceptable hotels on the Beach which offer rates varying from $19 per person to $36 per person for 6 nights. This plan is based on two persons occupying a room with twin beds and sharing a private bath.

Delta Air Lines' Plan A offers 6 nights, 7 days at $27 at any one of twelve luxury hotels. Two friends share a twin-bed room with private bath.

It is reported that National Air Lines has a similar arrangement with Miami Beach hotels.

BE AN EARLY FLAMINGO

Reserve accommodations now in the hotel of your choice. The McAllister and the Columbus, which are adjacent, will be the joint headquarters hotels.

IMPORTANT . . . MAIL YOUR APPLICATION PROMPTLY

Application for Housing Accommodations

THE AMERICAN DIETETIC ASSOCIATION

Miami, Florida • October 22–25, 1957

For your convenience in making hotel reservations for the coming meeting of THE AMERICAN DIETETIC ASSOCIATION October 22–25, 1957 in Miami, hotels and their rates are listed below. Use the form at the bottom of this page, indicating your first, second and third choice. Because of the limited number of single rooms available, you will stand a much better chance of securing accommodations of your choice if your request calls for rooms to be occupied by two or more persons. All reservations must be cleared through the Housing Bureau. ALL REQUESTS FOR RESERVATIONS MUST GIVE DEFINITE DATE AND HOUR OF ARRIVAL AS WELL AS DEFINITE DATE AND APPROXIMATE HOUR OF DEPARTURE, ALSO NAMES AND ADDRESSES OF ALL PERSONS WHO WILL OCCUPY RESERVATIONS REQUESTED *MUST* BE INCLUDED.

Hotel	Single	Double	Twin	Suites
ALCAZAR	$5.00	$7.00	$8.00	$14.00
BISCAYNE PLAZA	5.00–6.00		7.00–8.00	
BISCAYNE TERRACE	8.00		10.00–14.00	
THE ROBERT CLAY	5.00–6.00	5.00–7.00		
COLUMBUS*	6.00–8.00		8.00–17.00	30.00
DALLAS PARK			8.00	12.00–15.00
EVERGLADES	4.00–6.00		6.00–9.00	14.00–15.00
McALLISTER*	6.00–8.00	9.00–12.00	11.00–15.00	24.00–40.00
MIAMI COLONIAL	6.00	7.00	8.00–12.00	
PATRICIA	7.00		7.00	
THE TOWERS	6.00		7.00–8.00	12.00

(*) Headquarters hotels

In the event that the hotel room rate structure is changed prior to the above convention these rates will be changed accordingly.

ALL RESERVATIONS MUST BE RECEIVED PRIOR TO: September 20, 1957

American Dietetic Assn. Housing Bureau
320 N.E. Fifth St.
Miami 32, Fla.

Please reserve the following accommodations for: THE AMERICAN DIETETIC ASSOCIATION Convention in Miami, Florida, October 22–25, 1957

Single Room _____ Double Bedded Room _____ Twin Bedded Room _____

Other Type of Room _____

Rate: From $_____ to $_____

First Choice Hotel _____

Second Choice Hotel _____

Third Choice Hotel _____

Arriving at Hotel (date) _____ hour _____ A. M. _____ P. M. Leaving (date) _____ hour _____ A. M. _____ P. M.

THE NAME OF EACH HOTEL GUEST MUST BE LISTED. Therefore, please include the names of *both* persons for *each* double room or twin bedded room requested. Names and addresses of all persons for whom you are requesting reservations and who will occupy the rooms asked for:

_____

_____

_____

_____

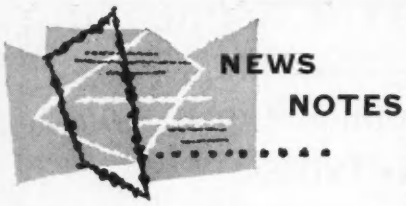
(Individual Requesting Reservations)

Name _____

Address _____

City and State _____

If the hotels of your choice are unable to accept your reservation the Housing Bureau will make as good a reservation as possible elsewhere provided all hotel rooms available have not already been assigned.



U.S.D.A. Organizational Change. A regrouping of research functions within the Agricultural Research Service of the U. S. Department of Agriculture has resulted in the formation of an Institute of Home Economics, in which work in human nutrition, household economics, and clothing and housing will be brought together under one unit. Formerly these functions were conducted in separate branches of the Service.

Dr. Hazel K. Stiebeling will lead the Institute as Director, reporting to the U.S.D.A. Research Administrator. Directors of the three research divisions of the Institute are: Dr. Callie Mae Coons, Human Nutrition; Dr. Gertrude S. Weiss, Household Economics; and Dr. Esther Batchelder, Clothing and Housing. Dr. Ruth Leverton has been appointed the new Assistant Director of the Human Nutrition Research Division.

Armed Forces Day. The Army, Navy, and Air Force have planned for the eighth annual observance of Armed Forces Day on May 18. "Power for Peace" will again be the theme this year as in the past three years. A feature of the observance will be "open house" programs and community projects at all installations, wherever feasible, in the U. S. and overseas. Designed to give Americans and the peoples of friendly countries a better understanding of the personnel, equipment, and teamwork of the various components of our Armed Forces, programs will feature educational exhibits, demonstrations, air shows, parades, drills, award ceremonies, vessels in port, meetings, sports events, social affairs, special films, and similar activities. Principal emphasis will be placed on the relationship between our national strength and our peaceful aspirations. The public is invited to take a close look at the national defense system.

Louisiana Tech Honors Dietitian. Louisiana Polytechnic Institute in Ruston has named a college dining room for Irene Tolliver Pyburn. Until her death last year, Mrs. Pyburn was a member of the faculty teaching students majoring in dietetics and institution management and an active member of the Louisiana Dietetic Association.

Dr. Parsons Honored. On the occasion of the 1957 Hospitality Day assembly at Kansas State College, Manhattan, Dr. Helen T. Parsons was presented with the college's distinguished service award. She was one of four graduates in home economics between the years of 1909 and 1914 to receive the award this year. The awards recognize outstanding achievement and service. Dr. Parsons is Professor Emeritus of Home Economics, University of Wisconsin.

1957 Appert Award. Dr. Emil M. Mrak has been selected as the 1957 recipient of the Nicholas Appert Medal awarded each year by the Chicago Section of the Institute of Food Technologists for outstanding accomplishments in food technology. Dr. Mrak is Chairman of the Department of Food Technology at the University of California, Davis. Presentation of the Medal will be made during the 17th Annual Meeting of the Institute of Food Technologists on May 14, in Pittsburgh.

Foods expected to be in plentiful supply during May, according to the U.S.D.A., will be:

Protein foods

Beef
Eggs
Halibut
Milk and other dairy products
Turkeys
Peanut butter

Other foods

Onions
Peaches, canned freestone
Plums, canned purple
Potatoes
Strawberries, frozen

Nutrition Education Conference Washington was the scene of a conference on nutrition education on April 1 to 3 for nearly two hundred leaders in nutrition and education. The conference, sponsored by the U.S.D.A. Nutrition Committee and the Interagency Committee on Nutrition Education and School Lunch, was concerned with increasing the effectiveness of nutrition education.

A symposium on nutrition education problems of different age groups was one of the highlights of the conference.

Speaking on nutrition of preschool children, Dr. Miriam Lowenberg, Head, Department of Food and Nutrition, Pennsylvania State University, emphasized the need for coordination and for greater stress on child psychology and infant feeding in medical training courses. She urged that up-to-date nutritional information and materials should be made available to the medical profession and workers in related fields. She suggested that nutrition educators put special emphasis on helping young mothers understand the great variance in children's growth and eating patterns.

Children in the elementary grades, said Dr. Willa Vaughn Tinsley, Dean of Home Economics, Texas Technological College, should be taught more for habit formation than for information. Educators can use the child's natural interest in food to help him build good eating habits, and they should teach elementary school children in terms of simple concepts, stressing the immediate benefits of healthful eating.

In discussing adolescent children, Dr. Ercel S. Eppright, Head, Food and Nutrition Department, Iowa State College, commented that teen-agers are not interested in future predictions, but they *are* interested in good diet as it influences good health, looks, and growth. Because teen-agers make up an extremely large and diversified segment of the population, it is difficult to organize and coordinate a program to meet their needs. Nutrition education for this age group should be aimed at building good attitudes and long-term philosophy towards foods, rather than at troubleshooting for the problems in teen-age eating habits.

Mary Egan, Senior Public Health Research Nutritionist, New York State Department of Health, recommended that adult nutritional education be centered around helping people to help themselves. She stressed the importance of a flexible and adaptable nutrition program, based on understanding of people's living habits as well as of their dietary habits.

A.H.A. Dietary Institutes. The American Hospital Association will hold an Institute on Dietary Department Administration in Dearborn, Michigan, May 20 to 24. The program, planned around the theme of "Dietary Management," will provide an opportunity for dietitians as well as others prepared in food service management and other members of administrative staffs, to exchange ideas and discuss problems. Sessions will include group participation, discussions, questions and answers, demonstrations, and round tables. Selected "faculty" speakers, specialists in their fields, will discuss and offer practical suggestions to the questions and problems presented by those attending the conference.

Topics to be covered in the various sessions will include: "Setting Food Standards"; "Merchandising Your Food"; "Personnel and Personnel Practices"; "Importance of Food Service Management and Public Relations"; "Communications and Public Relations Are Twins"; "Responsibility and Authority"; "How Can We Motivate People?"; "Selective and Set Menus"; "Training Employees"; "Food Service Supervisory Training Is a Must"; and "Budget Planning."

A second A.H.A. institute on dietary administration will be held in Los Angeles, August 5 to 9.

Home Economics Week-End. "Food Today—A Common Demoninator of All People" was the theme of the Pennsylvania State University's eighth annual home economics spring week-end, April 12 and 13. The following were included on the program:

"Food—A Common Denominator of All People"—Florence Reynolds, Information Officer, North American FAO Office, Washington, D. C.

"That Man in the Kitchen"—Dr. Peter Gray, Head, Department of Biological Sciences, University of Pittsburgh

"World Food Production"—Dr. Herrell F. DeGraff, Professor of Food Economics, Cornell University, Ithaca, New York

Meat...

Good Nutrition and the Metabolic Changes of Adolescence

The sharp increase in nutritional requirements during adolescence is ascribed to the rapid growth, restless activity, high basal metabolism, and increased rate of organ development during this period.[1, 2] Nutrient needs during adolescence are higher than at any other period of life[3] except for pregnancy and lactation.

In order to satisfy these extremely high nutritional requirements, "protective" foods supplying liberal amounts of protein, vitamins, and minerals should predominate in adolescent diets.[3] Such foods include meat, poultry, fish, milk, eggs, vegetables and fruits, and whole-grain or enriched cereals and enriched bread. Accessory foods commonly eaten by adolescents to satisfy emotional needs may provide energy, but are commonly responsible for obesity and should not take the place of the "protective" foods.

Meat contributes much toward making the daily meals of adolescents appetizing, ample, and satisfying as well as adequate in protein, B vitamins, iron, phosphorus, potassium, and magnesium. Its complete protein functions in all physiologic mechanisms utilizing protein—tissue growth and replacement, fabrication of enzymes, hormones, and antibodies, and maintenance of the body's fluid balance. Its B vitamins and minerals take part in many processes of intermediate metabolism important in body development.

1. Toverud, K. U.; Stearns, G., and Macy, I. G.: Maternal Nutrition and Child Health. An Interpretative Review, Washington, D.C., National Research Council, National Academy of Sciences, Bull. No. 123, 1950, p. 115.
2. Proudfit, F. T., and Robinson, C. H.: Nutrition and Diet Therapy, ed. 11, New York, The Macmillan Company, 1955, p. 271.
3. Martin, E. A.: Roberts' Nutrition Work with Children, Chicago, The University of Chicago Press, 1954, pp. 231-236.

The nutritional statements made in this advertisement have been reviewed by the Council on Foods and Nutrition of the American Medical Association and found consistent with current authoritative medical opinion.

American Meat Institute
Main Office, Chicago... Members Throughout the United States

"Work Smarter, Not Harder"—Mildred Arnold, Regional Representative, American Institute of Baking, Washington, D. C.

"School Lunch—Up to Date? Up to You!" Bertha Olson and Katherine Wisely, Food Distribution Division, U. S. Department of Agriculture

"Pennsylvania Food Laws Protect You"—Leland H. Bull, Deputy Secretary of Agriculture for Pennsylvania

"Modern Patterns of Eating Across the United States"—Nell Nichols, Associate Editor, *Farm Journal*, and author of *Good Home Cooking Across the U. S. A.*

"Selection of Quality Food"—Paul Ward, Bayer-Gillam Wholesale Produce Company, Tyrone, Pennsylvania

Meetings. Several meetings scheduled for June may be of interest to dietitians:

American Diabetes Association—June 1 and 2, Hotel Commodore, New York City

American Medical Association—June 3 to 7, Coliseum Building, New York City

American Home Economics Association—June 25–28, St. Louis

Correction: The editors regret an error in the March issue in the listing of the dates of the *11th Community Nutrition Institute*, Syracuse University. The correct dates will be June 17 to 29.

Summer Courses. The University of Illinois has announced two courses in institution management which may be of special interest to dietitians, school lunch managers, teachers, and those wishing to meet A.D.A. membership requirements. Dates for both courses are from June 18 to July 13, and each will carry 3 credits or ½ unit. Further information may be obtained from the Home Economics Department, 260 Bevier Hall, Urbana, Illinois. The courses are:

Group Feeding Problems: will deal with latest scientific principles and management techniques to the production and serving of food in quantity. The new home economics cafeteria will be used as the laboratory.

Institution Management: will emphasize designing a food service unit and selection of equipment and food purchasing. Course will consist of demonstrations, discussions, field trips, and special lecturers. Opportunity will be given to study the new equipment in the home economics cafeteria. The course will be of special interest to those who are remodeling or building.

Minnesota Research Program. With the help of a U.S. Public Health Service grant of $52,000 annually for three years, the Minnesota Department of Health is conducting a study titled, "Demonstration and Study for Improving Patient Care Services." The specific aim of this study is to determine how best to improve patient care by development or expansion and evaluation of refresher training courses for paramedical personnel, in-service training of aides for different categories, and extension courses in specific postgraduate fields. The study will also provide for the testing of training techniques applicable to the improvement of patient care. It is further hoped that the study will yield a guide for determining the most efficient methods to increase the number and proficiency of technical persons furnishing patient care.

Personnel employed for the study includes a dietitian consultant, Ardelle Lofquist. The Minnesota Dietetic Association has also cooperated with earlier activities undertaken with the assistance of a small grant from the Kellogg Foundation from 1950–55. From this earlier work, the staff of the current study is proceeding at present in areas of discussion, investigation, and analysis. Immediate goals, methods, and limitations are being explored to learn the problems to be considered in carrying through the study.

Milk for Summer Camps. This summer the U.S.D.A.'s special milk program will direct its efforts toward all types of summer camps. Because of the wide variety of eligible participants, many ways of increasing milk consumption will be developed and suggested. Some of the methods suggested thus far include: "milk breaks"; serving milk at an additional meal; serving extra fluid whole milk at meals; scheduling afternoon or evening pick-up snacks that include milk; substituting fluid whole milk for reconstituted non-fat dry milk; and so on.

The Agricultural Marketing Service helps in this program by reimbursing the participating camps for a part of the cost of all the extra milk served to the children. Thus the program in the camps will operate in the same way that the special milk program has operated in schools for the last two years.

Nursing Bibliographies. The National League for Nursing plans to publish a revised series of bibliographies on nursing in 1957, which will include selected annotated references to books, pamphlets, articles, and audio-visual materials considered useful in the study of nursing. The revised bibliographies are being developed by forty-three committees with special knowledge of the particular subjects on which they are working. Heading the committee to prepare material on nutrition and diet is an A.D.A. member, Margaret G. Phillips, School of Nursing, Massachusetts Memorial Hospitals, Boston.

Government Publications. *Household Consumer Preferences for Canned Fishery Products 1956* is the title of a new brochure from the Fish and Wildlife Service, Department of Interior. This report deals with preferences for canned fish and shellfish in U.S. households. The survey on which it is based was designed to assist the commercial fishing industry in obtaining a better understanding of factors affecting consumption of canned fishery products. Such factors as consumer preferences, buying practices, and methods of distribution were studied from July 1955 through June 1956. The data were tabulated to give separate summaries nationally and by geographic region, household income, family size, city size, age and employment status of homemaker, race, and religion. Copies may be obtained by requesting Circular No. 45 from the Fish and Wildlife Service, U.S. Department of Interior, Washington 25, D. C.

"Fresh Fruit and Vegetable Prepackaging, Northeastern Region, Operating Season 1954–55" has been released as U.S.D.A. Marketing Research Report No. 154. In it, the results of a cooperative study in the Northeastern states by the U.S.D.A.'s Agricultural Marketing Service and Cornell University are reported. Of the approximately one hundred fresh fruits and vegetables marketed in the Northeastern region, only about thirty were prepackaged by the plants surveyed. Some plants packaged as many as fifteen items, and some only one. Packaging of some commodities is still in the experimental stage. Vegetables are more generally packaged than fruits. Items more likely to be prepackaged are those to which such treatment provides protection from bruising, preservation of quality, sanitation, and consumer appeal and convenience. Leafy vegetables, such as spinach, usually require more attention in packaging than root-type vegetables or fruits. Some of the root-type vegetables, such as radishes, turnips, onions, and beets, were packaged almost entirely automatically. The bag was fabricated by a machine and the commodity was automatically weighed, bagged, and sealed. Other products were packaged almost entirely by hand. Copies of this report may be obtained from the U.S.D.A. Office of Information, Washington 25, D. C.

A second new booklet from the U.S.D.A. is an enlarged and revised edition of *Home Canning of Fruits and Vegetables* (Home and Garden Bulletin No. 8) which was prepared in answer to many requests from homemakers for latest information on home canning. Processing times for some foods have been revised as a result of additional research work. Raw-pack processing methods have been added for several foods, and some additional fruits and vegetables have been included. Charts give data on how many quarts of canned food a given quantity of raw fruit or vegetable should yield. One chart tells how to adjust processing times for pressure canning at different altitudes above sea level. Five picture series outline the steps in canning acid and low-acid foods by raw- or hot-pack methods in glass jars and tin cans. Complete instructions are also included for safe canning by hot- and cold-pack methods of fruits and tomatoes using a boiling water bath and for canning low-acid vegetables using the steam pressure canner. Individual canning instructions are provided for almost thirty fruits and vegetables, fruit purées, and fruit and tomato juices. General information on care and use of canning equipment is also given. Single copies may be obtained free from the Office of Information, U.S.D.A., Washington 25, D. C.

FAO Publication. FAO has published the first issue in a series on *World*

Don't throw money away on broken dishes!

Replacement Costs of 144% in a Year! A restaurant recently showed us these figures: Original investment in dinnerware of $5,000. Replacements because of breakage in a year, $7,200. Their replacement cost was 144%.

6% Replacement Costs In a Year!

A drug chain of 35 stores invested $26,000 in our melamine dinnerware. In the fourth year of service, replacement because of breakage was only $1,382 for all 35 stores! This replacement cost was less than 6%.

You can solve your breakage problem with

new-exclusive REGAL WARE

banded color-on-color

PAT. PENDING

Here's new beauty and strength . . . strength that makes this melamine dinnerware hard to chip, crack or break. Regal Ware Banded Color-on-Color is made by the exclusive process of bonding two colors into a single piece. Each piece has the self-draining contour base and heavy duty rolled edges. For more information about money-saving Regal Ware write:

Plastics Manufacturing Co. 825 Trunk Ave. Dallas, Texas

Luxury Look Colors
Banded on Tan — Sepia
Banded on White —
Burgundy, Jonquil Yellow, Pastel Blue, Sea Green, Stone Gray, Bermuda Coral, Sage Green.

Also available in solid and textured colors, and in decorated patterns.

AT NATIONAL RESTAURANT CONVENTION . . . BOOTH 236-238 NAVY PIER, CHICAGO

Food Problems entitled: "Nutrition and Society." It consists of three sections. The first part is a reproduction of a lecture by Professor André Mayer of France given to inaugurate the Second Training Course for Nutrition Workers South of the Sahara, held at Marseilles, October 1955, and organized jointly by the French Government, WHO, and FAO. The lecture is followed by a biography of "Monsieur FAO" as Professor Mayer was sometimes called. The French National FAO Committee supplied the text of this short biography. The concluding section is a factual account of FAO's work in the field of nutrition written by the Director of the FAO Nutrition Division, Dr. W. R. Aykroyd.

This series on *World Food Problems* by FAO has been inaugurated in an effort to provide general information for the lay public on the activities of the organization and the food and agricultural problems which the world faces.

Film on Beef. A new 1-min. public service television film on beef has been released by U.S.D.A. This film is an animated, carnival-background cartoon in 16 mm., black-and-white. sound. It was produced to inform consumers that abundant supplies of beef are available to them this spring. Special efforts will be made to promote its showing in May, with "peaking" from May 9 to 18.

Spending for Dairy Products. According to U.S.D.A. figures, U.S. families, on the average. spend more for dairy products than any other group of foods except meat. Meat took 25 per cent of the family food dollar, dairy products 17 per cent, with other food groups representing smaller percentages. However, a smaller share of the food dollar was spent in 1955 on dairy products than in 1848, when urban households of two or more persons used 19 per cent of their food budget for dairy products, compared with 17 per cent in 1955. Reasons for this drop, as suggested by U.S.D.A. economists, include the fact that retail prices of dairy products dropped about 2 per cent between the two surveys, while prices of all foods used at home rose 5 per cent. Also, families are eating more meals away from home, which cuts into household purchases of dairy products. A shift away from home baking may also affect purchases of butter and milk. On the other hand, larger families with more children have tended to maintain expenditures for fresh whole milk, particularly.

In 1955, the purchases of dairy products could be divided as follows: almost half went for fresh fluid milk; 14 per cent for ice cream, 11 per cent for butter, and 10 per cent for wholemilk cheese. Families in the North east spent the most for dairy products, southern families the least, but a larger proportion of southern families lived on farms and nearly two-thirds had home-produced dairy products.

Why Too Little Milk? To learn why people don't drink enough milk, workers at the Michigan Agricultural Experiment Station surveyed 424 families in the city of Lansing. Education apparently had more influence on the use of milk than money. More of the higher-education, lower-income families had adequate milk than the lower education groups of either higher or lower incomes. The lower-education groups were less likely to appreciate the value of milk, more likely to have prejudices and misconceptions as to milk being "fattening" or "not an adult food." However, social custom curtailed use of milk by the higher-education group, although most of them realized its nutritive value. It was not considered a "social drink," as is tea or coffee, and they generally chose other beverages than milk when eating out. Farm-reared adults, especially women, were more than twice as likely to dislike milk as those whose childhoods were spent in town. It was encouraging, the workers noted, that more than half of the homemakers whose families drank too little milk realized that the family diets would be improved by using more.

Quality for Canned Yams. With the increased popularity of canned sweet potatoes, quality which stands up under canning conditions is desired. As the state which grows the second largest crop of sweet potatoes, North Carolina horticulturists of the Agricultural Experiment Station are trying to develop varieties of sweet potatoes especially suited to canning. A uniform deep orange color tops the list of qualities wanted. Such color will make canned sweet potatoes "look delectable" and also rate high for vitamin A. Newly released varieties, such as Goldrush and Kandee, show the deep color trend. Firm texture is also wanted. Sweet potatoes are cured and stored before canning, both to improve flavor and extend the canning season. Some varieties soften too much in canning after curing. Appetizing flavor, the right amount of moisture, and firm-yet-tender texture without stringiness are also qualities desired for canning yams, as is good resistance to disease and a potato which won't skin or bruise easily during mechanical harvesting.

Wheat for Japan. A concerted campaign to increase the use of wheat as a food in Japan indicates that it may have an important place in the Japanese diet in the future and that Japan is a promising foreign outlet for American wheat.

Since World War II, the Japanese have become increasingly health conscious and more interested in a balanced diet, especially one which will improve their growth and health. The Japanese have equipped eight mobile kitchens and trained three nutritionists for each kitchen. These units will travel from village to village demonstrating the use of wheat food in a balanced diet. A modern baking school has also been established where 160 bakers are being trained in the best methods of making wheat bread. They will return to their home provinces to teach village bakers how to make good bread with the equipment they have. The Japanese also have trained one home-life-improvement specialist for each of the country's forty-six prefectures. These specialists will guide other extension workers at home in teaching better uses of wheat foods. Already this training has reached more than 1500 workers, and the number is expected to increase.

In addition, thousands of pamphlets and posters have been distributed throughout the country showing the advantages of wheat as food. One poster shows a large, muscular man with the words "wheat eater" underneath. Beside him stands a short, thin man nourished only by the traditional Japanese diet. Most of the posters show that meat, milk, and vegetables are also important in the most desirable diet.

Soil Nitrogen and Canned Peach Quality. Nitrogen fertilization of the peach tree can greatly improve the quality of the fruit when canned, according to studies with Elberta peaches reported at the U.S.D.A.'s Fruit and Vegetable Products Laboratory, Prosser, Washington, and the Washington Agricultural Experiment Stations at Pullman and Prosser. By testing the leaf nitrogen, the nitrogen status in the tree was found to be related to the canning quality of the fruit. High-nitrogen content resulted in firm canned fruit with good color and texture, while low-nitrogen canned peaches were astringent, fibrous, soft, frequently unpalatable, and the flesh tended to adhere to the pit. More striking was the loss of firmness and shape of halves when stemmed before peeling.

When fresh, the low-nitrogen peaches were firm, handled well, and had a bright golden color and attractive blush. Thus the effect of nitrogen fertilization is important primarily for producers of canning fruit.

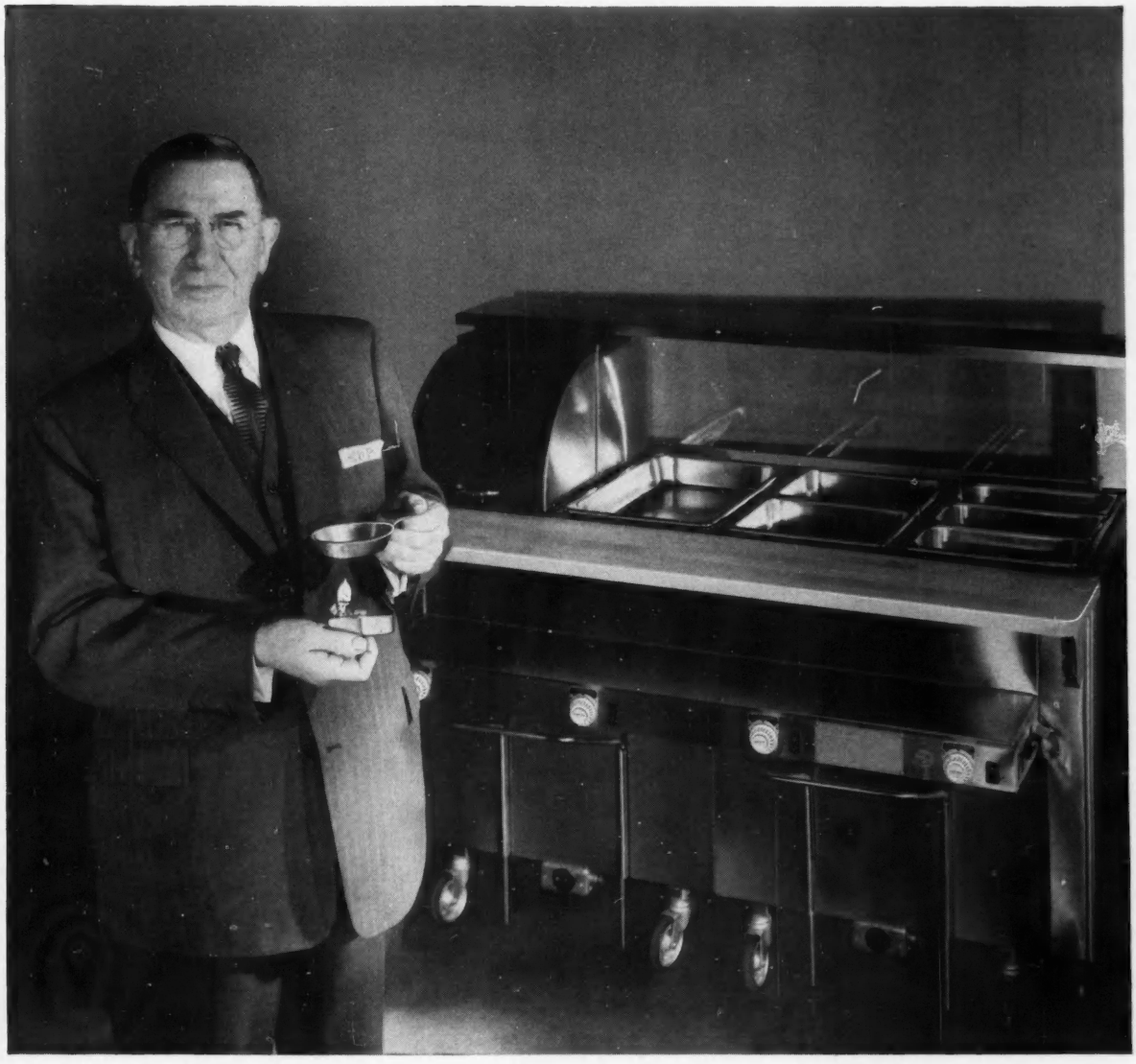
It is pointed out, however, that there are disadvantages in increasing nitrogen fertilization, including greater preharvest drop and greater variation in fruit maturity, which may mean four or five pickings rather than one of two needed for low-nitrogen trees.

News of State Associations

Alabama Dietetic Association. The Alabama Dietetic Association celebrated its twenty-fifth anniversary when it met on April 26 and 27, in Tuscaloosa. The program featured:

"What Is Communicating?"—Dr. James McMillan
"The Art of Listening"—Robert L. Bannerman
"Communications and Learning"—Dr. Robert Hammock
"Ways to Make Discussions Most Profitable"—Mildred Van de Mark
"Current Treatment of Hepatitis"—Dr. Killough H. Patrick, Jr.
Panel: "Increasing Protein in the Diet" —Dorothy Merry, Leader
"History of the Alabama Dietetic Association"—Dr. E. Neige Todhunter

Georgia Dietetic Association. The midwinter meeting of the Georgia Dietetic Association was held in Albany on February 7. In the morning, Dr. J.



"I guarantee Thurmaduke Waterless Food Warmers to be as much as 70% more economical than all other food warmers"

says M. P. Duke, President, Duke Manufacturing Co.

This simple Direct Heat Test proves it's a waste of money heating water to warm food. When heat is applied directly to a warming container, as in Thurmaduke Waterless Food Warmers, as much as 70% less heat is required than in *any* water-type warmer.

Thurmaduke saves you money in many ways. Thurmaduke has more efficient Selective Heat Control for each section than any other food warmer made. Foods like mashed potatoes and soups can be stored side by side at the exact temperature best for each. Less food shrinkage and more portions per pound mean more profit for you with a Thurmaduke. Each section is fully insulated on all sides and bottom to prevent heat passage between sections and out into the room. This means Thurmaduke gives you terrific fuel savings, more accurate temperature control for perfect food storage. With Thurmaduke Waterless Food Warmers, there is no costly overload on your air conditioning as caused by all water-type warmers.

Don't buy any food warming equipment until you have made a feature comparison with Thurmaduke. I personally guarantee the complete line of Thurmaduke Food Warmers to have more quality features than any other made. *Write me for complete information on Thurmaduke Food Warmers, Standard Sectional Cafeteria Counters, and a free Feature Comparison Chart.* Meanwhile, let your nearby Thurmaduke dealer show you how the Thurmaduke pays for itself out of fuel savings alone.

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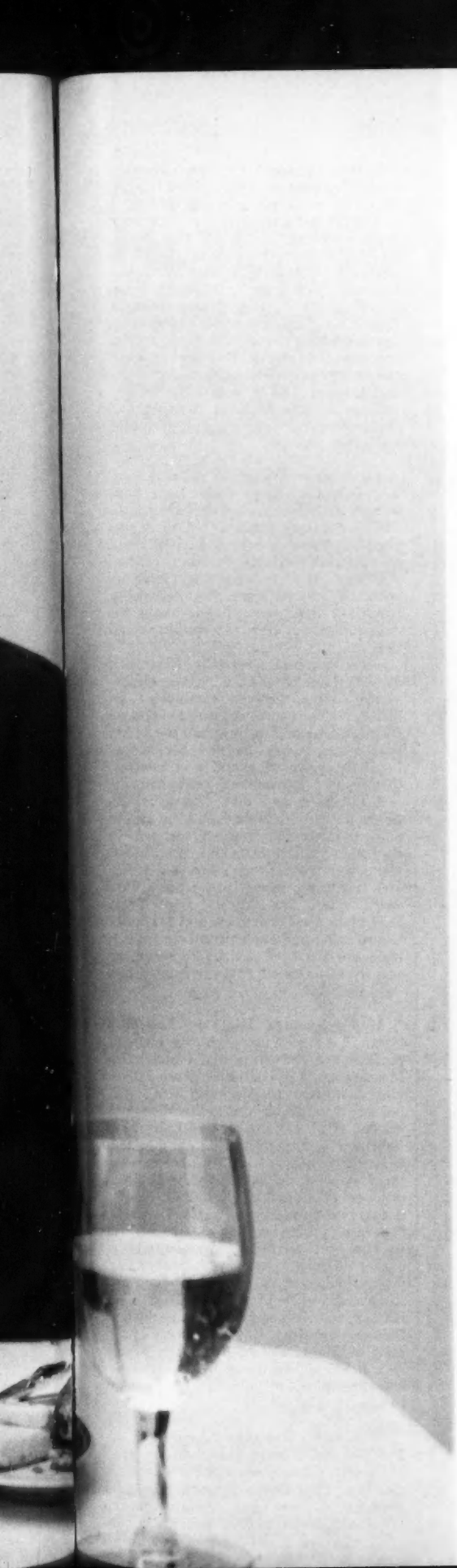

GOOD FOOD TASTES BETTER WITH HEINZ

When people have a choice of ketchup and chili sauce—when they shop for their own table—their first choice is Heinz. When they eat away from home, Heinz is the brand they want to see.

The Heinz bottle is the sign of good eating. Its message: *only the best served here.*

What does it cost you to keep Heinz on the table? An average 20¢ worth of ketchup for every $100 in food served.

You can even get a special advertising allowance by keeping the Heinz bottle on the table or tray, where the public can see it—through a special offer called the Heinz Condimental Contract. You don't have it? Then get the facts about this money-saver at once. Ask your Heinz salesman or Heinz Distributor for complete details.

HEINZ 57

KETCHUP & CHILI SAUCE

Dean Paschal, Albany pediatrician, spoke on nutritional needs of children. Highlight of the afternoon program was a talk by Major Bo Hi Pak of the Korean infantry, who was then taking his second tour of training at Ft. Benning. Civil defense needs were discussed by Gerald D. Cauble, Georgia Co-ordinator of Civil Defense Training.

Recruitment has been a special project in Georgia this year, with the Association sponsoring a series of teas throughout the state for high school junior and senior girls, as well as homemaking teachers. The first of these teas was held in Atlanta on January 8, with some 125 people attending, including a home economics teacher from each of the Atlanta high schools.

Kansas Dietetic Association. On April 26 the Kansas Dietetic Association held its spring meeting in Kansas City. The program included a speaker on equipment from the Midwest Research Institute; a panel conference on "What Does the Future Hold for Dietitians?"; and a discussion of diseases of the liver by Dr. Marion Lambert, University of Kansas Medical Center. Scheduled for the afternoon was a visit to the exhibits of the Midwest Hospital Association meeting. At the luncheon meeting, Fern Gleiser, University of Chicago, spoke on "Is Graduate Training of Value to Dietitians?"

A continuing education workshop, planned jointly by the Kansas and Missouri Dietetic Associations, will be held June 13 and 14 in Kansas City. The Education Section chairmen will be responsible for the plans for this workshop.

The seventh annual hospital food service workshop sponsored by the Kansas Hospital Association will be held June 10 and 11 at the University of Kansas, Lawrence. The program is being planned by members of the Kansas Dietetic Association for the purpose of providing an opportunity for the food service supervisor to learn through personal contact, group meetings, demonstration, and lecture. The program will include various aspects of menu writing and evaluation, purchasing, and personnel management.

Louisiana Dietetic Association. The *Lake Charles* area dietitians have formed an association which they hope will eventually include dietitians in surrounding towns. Barbara B. Campbell, St. Patrick's Hospital, was elected President. At its first meeting, the group heard a report from Betty Mueller Brantley, Louisiana public relations chairman, about state association activities.

Fifty graduates of the *Shreveport Dietetic Association's* food service supervisors course received certificates on March 29. The course consisted of classes on organization, menu planning, food purchasing, sanitation and housekeeping, food production and cost control, techniques of personnel management, and nutrition and diet therapy. Participating students included managers and administrators from a grocery chain operating cafeterias and fountains; managers from drug store cafeterias and fountains; supervisors from a Boy Scout camp, the Officers' Club from Barksdale Air Force Base and National Guard unit; and representatives from a home for the aged and board members and food service supervisors from seven local hospitals.

Massachusetts Dietetic Association. To shed more light on current professional incentives and trends, the Massachusetts Dietetic Association played hostess to Marguertie W. Zapoleon, Special Assistant, the Women's Bureau, U.S. Department of Labor, on February 5. Mrs. Zapoleon emphasized that many different professional groups must depend on a relatively limited number of potentially eligible candidates. She pointed also to the frequent failure of professional groups to utilize to the best advantage women whose earlier family responsibilities have diminished.

Dr. Alexander Marble, Joslin Clinic, Boston, was the guest speaker at another February meeting. He spoke on "What's New in Diabetes?" In April, Dr. Frederick J. Stare, Department of Nutrition, Harvard School of Public Health, spoke to the Association.

Missouri Dietetic Association. April 4 and 5 were the dates of the Missouri Dietetic Association's annual meeting. Thursday afternoon speakers were: Dr. Thomas Luckey, who spoke on "Nutrition in Germ Free Animals"; and

FAST FOOD SERVICE REQUIRES

fast toast production

Fast food service is essential to serve on-time breakfast trays – with plenty of crisp delicious hot toast– and a stainless steel Savory gas or electric toaster is essential to fast food service because a single unit easily produces up to *12 slices per minute* at lowest operating cost.

A Savory Toaster automatically unloads fresh hot toast, ready for serving, by means of its continuous conveyor system–and a toasting basket is *always* ready for loading. This reduces work-load and eliminates delay at the toasting station–and the perfect degree of crispness, color and texture of every slice is guarded by automatic time and temperature controls.

Ask your dealer or write for details to:

- Models producing 6 to 12 slices per minute!
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Mr. McBryde was fit to be tied!

And no wonder! He counted on summer's iced tea to build his beverage profits up. But . . .

Sadly, McBryde's iced tea let his patrons down. They wanted that brisk flavor that won't fade—even when iced. Then one day . . .

A customer cried, "Have you no pride, McBryde? Why aren't you serving brisk Lipton Iced Tea? *That's* the kind we drink at home!" So . . .

McBryde complied! And he found that Lipton Iced Tea comes from a *special* blend . . . just for *iced tea*. That's why . . .

Its rich, lively flavor won't fade when iced. In handy one-oz. and *new two-oz.* tea bags. (Profit: 78% on every gallon!) And . . .

McBryde's customers loved Lipton! So . . . upsoared iced tea sales. In poured McBryde's profits! We think, like McBryde, it's time *you* tried serving Lipton Tea . . . and . . .

The other famous Lipton products, too . . . Lipton Soup Mixes (home-cooked goodness!) and Lipton Flavor Boosters (for zesty main dishes).

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Dr. William Daughaday, whose topic was "Recent Research in the Field of Fats." Friday morning included speeches by Dr. Robert Eastman on "How to Save Time and Energy" and J. W. Putsch on "Food Styling and Merchandising."

The *Central Missouri Dietetic Association* met on February 7 in Columbia and adopted a constitution patterned after the national constitution. Sixteen members voted. The following officers were elected: President, Frances A. McKelvy; President-Elect, Barbara Birmingham; Secretary, Dr. Laura Flynn; and Treasurer, Marita Monroe.

A total of sixteen group discussions on food buying have been planned this year by the *St. Louis Dietetic Association* and the Health Education Section, Health and Hospital Division, St. Louis Social Planning Council. Dietitians lead the discussions in which tenants of two of St. Louis' largest housing projects are participating.

As part of its continuing education program, the *St. Louis Dietetic Association* held a one-day institute at Fontbonne College on January 22. Over seventy-five dietitians from Missouri and Kansas attended. Mary Lewis, Director, Social Service Department, Washington University Clinics, discussed "Psychology of Counseling and Interviews," and Harry Panhorst, Associate Director of the Clinics, spoke on "What It Means to Be a Good Administrator." Capt. John A. Ey, Jr., Department of the Army, Office of the Surgeon General, presented "Techniques, Methods and Psychology of Instruction." Capt. Ey stated that teaching is an art and a skill. It is the teacher's job to interpret and translate material so the student can apply it.

North Carolina Dietetic Association. The spring meeting of the North Carolina Dietetic Association was held in Fayetteville on April 4. The program included workshops conducted by the section chairmen, as well as two speeches: "Some Aspects of Nutrition in Infectious Diseases" by Lt. Col. John K. Spitznagel, MC, U.S. Army; and "Stress and Mental Health" by Dr. Albert A. Branca, Chief of Clinical Psychology, VA Hospital, Fayetteville.

Mary Louise Ledbetter, a student at Women's College, Greensboro, has been awarded the $100 scholarship of the North Carolina Dietetic Association for a year of internship. She plans to intern at the U. S. Public Health Service Hospital, Staten Island, New York.

As part of its public relations activities this year, the North Carolina Association is showing the A.D.A. food model exhibit at the meeting of the North Carolina Dental Society in Pinehurst, May 6 to 8, and again before the joint meeting of the North Carolina Public Health Association and the Southern Branch, American Public Health Association in Asheville, May 28 to 31.

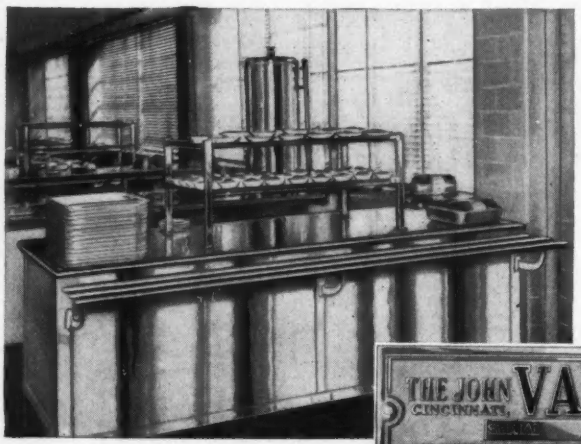
North Dakota Dietetic Association. North Dakota Dietetic Association held its annual spring meeting on March 13 in Grand Forks at the University of North Dakota. Features of the program were a speech by Dean Theodore H. Harwood of the Medical School, on the North Dakota Medical Rehabilitation and Treatment Center, and a tour of the Ireland Memorial Research Laboratory. After the tour, a report on the nutrition research in biochemistry was given by Drs. W. E. Cornatzer and Francis Jacobs of the Medical School. Bessie Brooks West attended the meeting as A.D.A. representative.

Oklahoma Dietetic Association. Tulsa was the place chosen by the Oklahoma Dietetic Association for its spring convention March 22 and 23. Principal speakers were Leonard Andrews, whose subject was "Working with People of Other Races and Cultures" and Dr. Una L. Robinson, Indiana University, who spoke on "Research on Kwashiorkor in South America."

Goodner-Van Equipment Company has set up a scholarship fund to aid dietetic interns of Oklahoma. The sum to be available for 1957–58 will be $200. This permits O.D.A. to offer two scholarships.

Oregon Dietetic Association. The spring meeting of the Oregon Dietetic Association was held at Oregon State College, Corvallis, April 6. The program included:

"Current Work on Potatoes"—Dr. Andrea Mackey, Professor of Foods and Nutrition, Oregon Agricultural Experiment Station



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Architect • Edward J. Wood & Son • Clarksburg

Van equips *third* kitchen at Hopemont Sanitarium

★ Van has earned an enviable record of satisfaction with its food service equipment. Reorders from institutions 10, 20, 30 . . . even 50 years after its first installation underline that satisfaction. Hopemont Sanitarium is no exception.

★ Above is illustrated the Van-equipped employees' cafeteria in the new Unit B completed late in 1954. All Hopemont Sanitarium buildings have Van kitchen equipment. It is capable of serving three meals a day to 600 patients and employees.

★ When you require food service equipment improvements, get the benefit of Van's *century of experience.*

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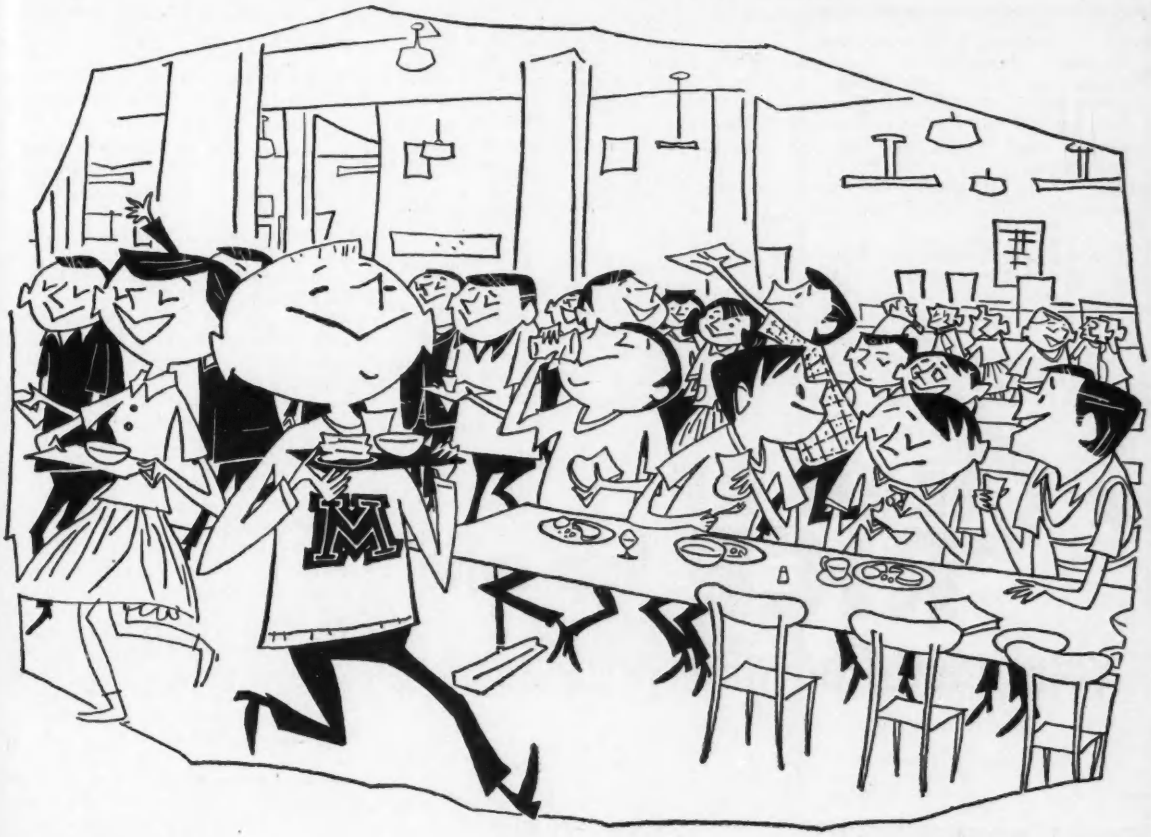
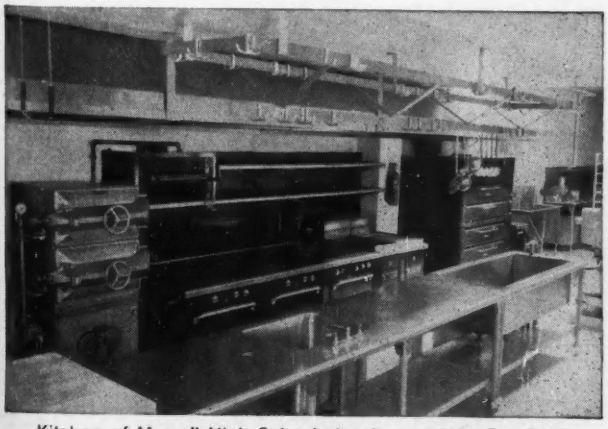


2,000 hot, nutritious meals each school day ...thanks to GAS



Kitchen of Morrell High School showing modern Gas-fired equipment.

Just one look at the efficient cafeteria operation of Morrell High School, Irvington, New Jersey proves Gas is best for performance, cleanliness, speed and economy. More than 2,000 hot, tasty meals are turned out every day in a streamlined operation using Gas-fired cooking equipment. Gas is preferred and used in all food service operations, from deep frying to baking and cooking. The modern Gas equipment includes 3 ranges, 2 fryers, a broiler and an Add-A-Unit, all by Magic Chef, as well as a Blodgett oven, a Groen stock pot, and a Cleveland Steam Chef vegetable cooker. A Blakeslee dish-washing machine and Plibrico incinerator complete Morrell's list of Gas-fired equipment.

For information on how you can benefit by using Gas and installing modern Gas equipment, call your Gas Company's commercial specialist. He'll be glad to discuss with you the economies and outstanding results you get with Gas and modern Gas equipment. *American Gas Association, 420 Lexington Avenue, New York 17, New York.*

"Current Research in Labor Evaluation"—Professor R. Donald Langmo, Assistant Professor of Industrial Enginering, Oregon State College

"Observations at Children's Hospital Cincinnati, Ohio"—Dr. Margaret Fincke, Head, Foods and Nutrition Department, Oregon State College

"Pilot Meat Program"—Dr. Rolla Sexauer, Assistant State Veterinarian

Pennsylvania Dietetic Association. Pittsburgh was the scene of the twenty-fourth annual meeting of the Pennsylvania Dietetic Association, April 24 to 26.

One point of interest was a panel titled "The Hospital Patient." Speakers included: Dr. John R. McGibony, Professor of Medicine and Hospital Administration, Graduate School of Public Health, The University of Pittsburgh; Dr. Stanley King, Research Associate in Public Health Practice, Graduate School of Public Health, The University of Pittsburgh; and Dr. Harry Dorsey, Administrator, Western Psychiatric Institute and Clinic.

On April 26 the following speeches were presented:

"Textiles and Cleaning Aids from the Standpoint of Use"—Dr. Jules Labarthe, Administrative Fellow of Multiple Fellowship on Commodity Standards, Mellon Institute

"Interviewing Techniques and Application" (with demonstrations)—Eleanor Cockerill, School of Social Work, The University of Pittsburgh

Texas Dietetic Association. Texas dietitians met March 14 to 16 in Dallas. The program was as follows:

"You Are the Key to Your Professional Advancement"—Winifred Howard Erickson, Immediate Past-President of A.D.A., St. Paul

"You Are the Key to Better Management"—Roderic M. Bell, Assistant Administrator, Dallas County Hospital District

"You Are the Key to Dynamic Leadership"—Tavis Elliot, Management Consultant, Texas Restaurant Association, Austin

"You Are the Key to Current Nutrition Information: The American Diet—What It Is Doing to Us"—Dr. Robert Barton, Specialist in Internal Medicine, Dallas

"You Are the Key to Combating Food Misinformation'—Wauthena E. Temple, Head, Home Economics Department, East Texas State Teachers College, Commerce

"You Are the Key to Work Simplification"—Carolyn Cason, Director of Food Service, Rice Institute, Houston

"You Are the Key to Your Profession's Growth"—Wilson Wells, Executive Secretary, Texas Commission on Patient Care, Austin

Washington State Dietetic Association. On April 5 and 6, the Washington State Dietetic Association held its spring meeting in Yakima. Included in the program were the following speeches:

"Nutrition Research Problems"—David M. Williams, M.D. Internist, Yakima

"Nursing Problems in Feeding Patients"—Laura Jamison R.N., Instructor of Practical Nursing, Yakima Valley Junior College, Yakima

"We Starved Our Way"—S. I. Anthon, News Director, Yakima *Republic Papers*

"How to Recognize and Correct Food Fads"—Dr. Mary Louise Johnson, Acting Dean, School of Home Economics, University of Washington

"Food Customs and Nutritional Status in Pakistan"—Agnes Sunnell, Yakima County Extension Service

"New Trends in Food Service: Use of the Conveyor Belt"—Nena Osterud, King County Hospital, Seattle

"The Meal Pack System"—Beth Gannon, The Swedish Hospital, Seattle

"Packaged Food Service"—Lauretta Worklan, School Lunch Supervisor, Bremerton Public Schools

"Proper Use of Equipment"—Margaret Terrell, University of Washington

"Portion Control"—Philip Manning, Dohrmann Hotel Supply, Seattle

Wisconsin Dietetic Association. March 29 and 30 were the dates of the annual meeting of the Wisconsin Dietetic Association in Milwaukee. The first morning program featured a discussion by Dr. Harold Coon, Administrator, Milwaukee County Hospital, on the effective use of the dietitian, and a report on recent developments in the

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EXTRA NOURISHMENT

Cream of Rice is rich in iron plus Vitamins B_1, B_2, and Niacin.

It gives quick energy fast, too. Actually within a few minutes after eating. Cream of Rice is easy to digest. Many leading pediatricians advise it.

And many doctors recommend Cream of Rice in modified diets for food allergies, ulcers, high blood pressure, intestinal distress and old-age food difficulties.

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EASY TO FIX

Now Cream of Rice cooks in just 30 seconds. That's 10 times faster! What could be easier . . . quicker . . . less work! It's a meal in half a minute. A delicious, nourishing, easy-to-digest cereal young and old enjoy.

3
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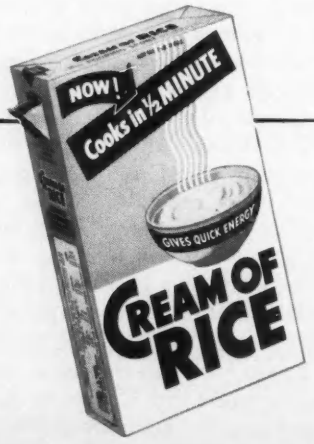
Cream of Rice has a delicate flavor. Different, delicious. This is a creamy rice treat that really tastes good.



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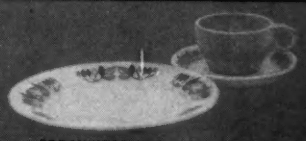

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treatment of children's metabolic diseases by Dr. Stanley Berlow, Assistant Professor of Pediatrics, Marquette University. Dr. Berlow's subject included a discussion of phenylketonuria, a form of deficiency afflicting some ten thousand children in the U.S.

Amino acids, the latest consideration in protein research, was spotlighted at another session. The scientific story, including the use of college girls in the experimental studies, was discussed by Dr. May Reynolds, Professor of Foods and Nutrition, University of Wisconsin. Dr. James Price, Associate Professor of Surgery, University of Wisconsin, followed, showing how these findings are being utilized in current medical practice. The concluding address of the first day was "You Don't Have to Bore People" by Guy Williams, Veterans Administration.

The program of the following morning featured a discussion of new developments in the dairy industry by Paul A. Buck, Professor of Dairy Food Industry, University of Wisconsin.

Association Activities

Diabetic Diet Materials. You can now obtain copies of the A.D.A. "Bland, Low-Fiber" and "Sodium-Restricted" diabetic diet modifications from the Headquarters office. These two leaflets are for use with the "Meal Planning with Exchange Lists" booklet and are the same size and price as the nine meal plan leaflets—5 cents each or $2 per hundred.

New Allergy Recipes. In a bright cover and an attractive format, the revised A.D.A. *Allergy Recipes* booklet is just off the press. Some 150 recipes for help in planning meals which are wheat-, milk-, or egg-free are presented. This material is available at 50 cents a copy from Headquarters office.

State Meetings. A.D.A. representatives attending the following state dietetic association meetings are:

May 2-3—Dr. Doris Johnson, New York State Dietetic Association, Utica
May 2-3—LeVelle Wood, Tennessee Dietetic Association, Nashville
May 9—Lucille M. Refshauge, New Hampshire and Vermont Dietetic Associations, Durham, New Hampshire
May 9—Dr. E. Neige Todhunter, California Dietetic Association, Los Angeles
May 23—Martha N. Lewis, Minnesota Dietetic Association, St. Paul

Publications and Reprint List. Each member recently received the March 1957 A.D.A. *Publications and Reprints* list along with the *Annual Reports and Proceedings—1955-56*. If this mailing did not reach you, please inform Headquarters office so that your correct address may be checked.

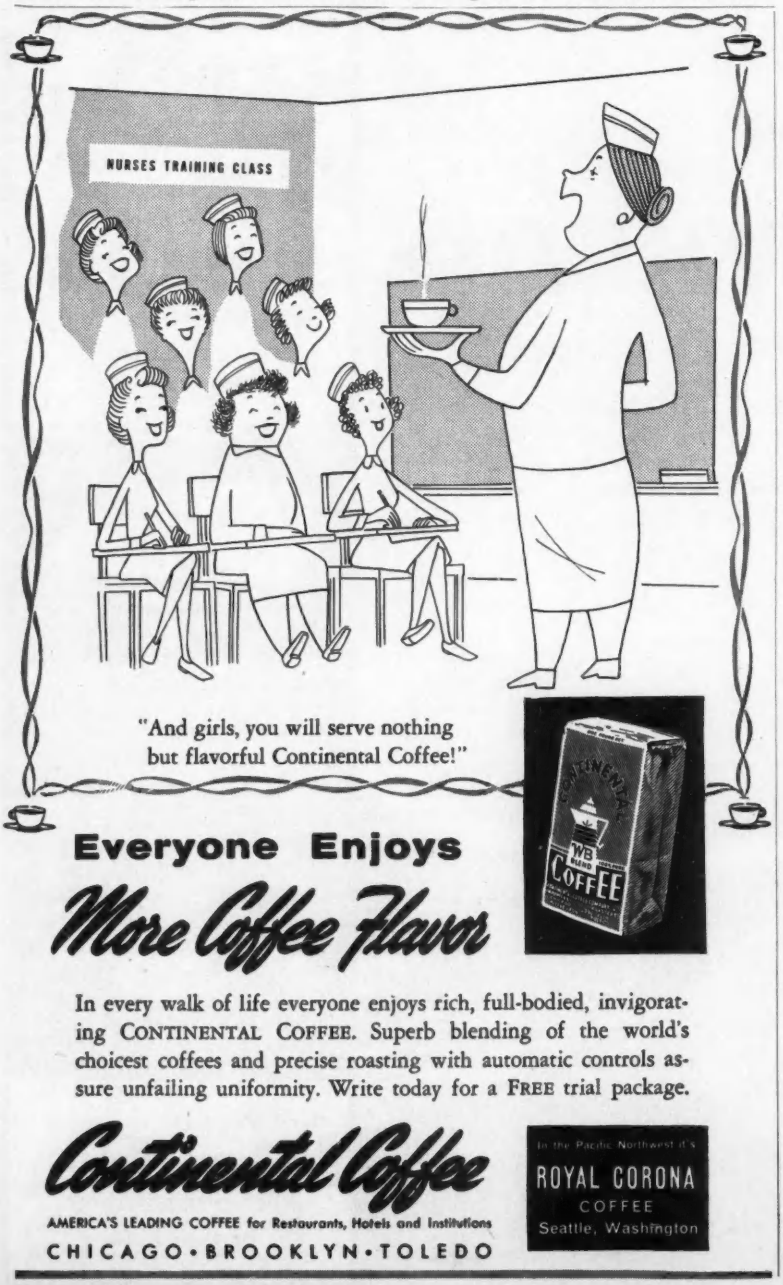
The latest *Publications and Reprints* includes references to many recent reprints in the areas of administration, community nutrition, diet therapy, and education and offers other materials and publications in these areas. A number of career guidance materials are also available.

National Exhibit Notes. Even as the JOURNAL comes off the presses, A.D.A. members are launching a career exhibit at the opening of the *American Personnel and Guidance Association* annual convention, Detroit. Stationed at the Statler Hotel until the 18th of this month, members will show career slides and distribute literature. Waneta Holscher is heading the committee. Among pamphlets being used during the event is "Dietitians in Demand," popular A.D.A. publication which will be used extensively across the country during "Hospital Week."

In Chicago, members are anticipating the forthcoming *National League for Nursing* convention to be staged at the Conrad Hilton Hotel, May 6 to 9. The exhibit scheduled for showing is "Achieve Your Proper Weight."

During the latter part of May, (to be exact, the 27th to 30th), an A.D.A. exhibit will appear in Cleveland, where the *Catholic Hospital Association* holds its annual meeting. The shadowbox presentation, "Shared Dietitian," will be shown.

"Diet Therapy" will be on view at the annual meeting of the *American Medical Association* to be held in New York City, June 3 to 7. This display is a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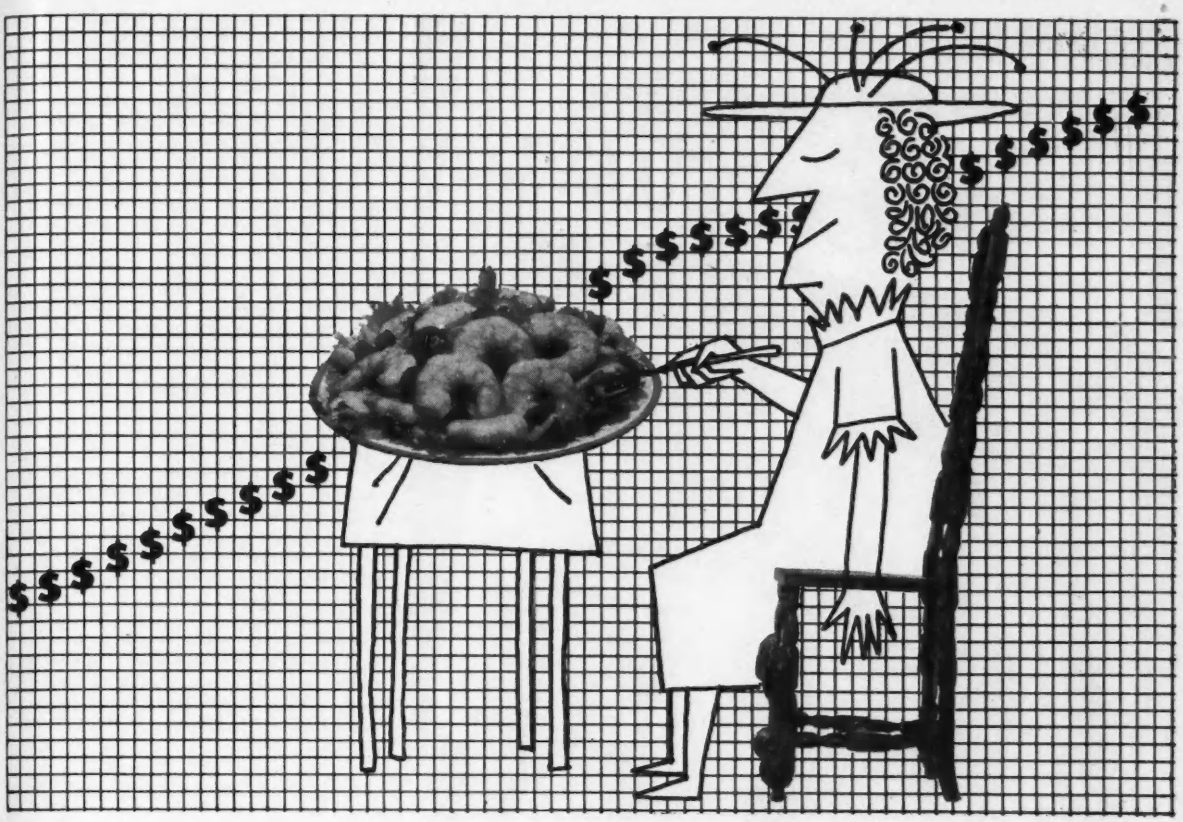

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CREOLE SHRIMP SALAD

1-Minute French Dressing

2½ tbsp. salt	1½ tbsp. prepared mustard
2 tbsp. sugar	2 cups vinegar
2 tsp. pepper	1 tbsp. Worcestershire Sauce
2 tsp. paprika	1½ qts. Wesson Oil

(Remember, this is the super-refined oil *most* of your customers use at home.)

Beat until all ingredients are well blended. Stir each time before using. Sprinkle 3 tablespoons over individual servings of ingredients below:

tomatoes	hard-boiled eggs (sliced)
shrimp	cucumbers (sliced)
cooked green beans	radishes (sliced)

Place serving on leaves of lettuce, endive, escarole or other salad greens in season.

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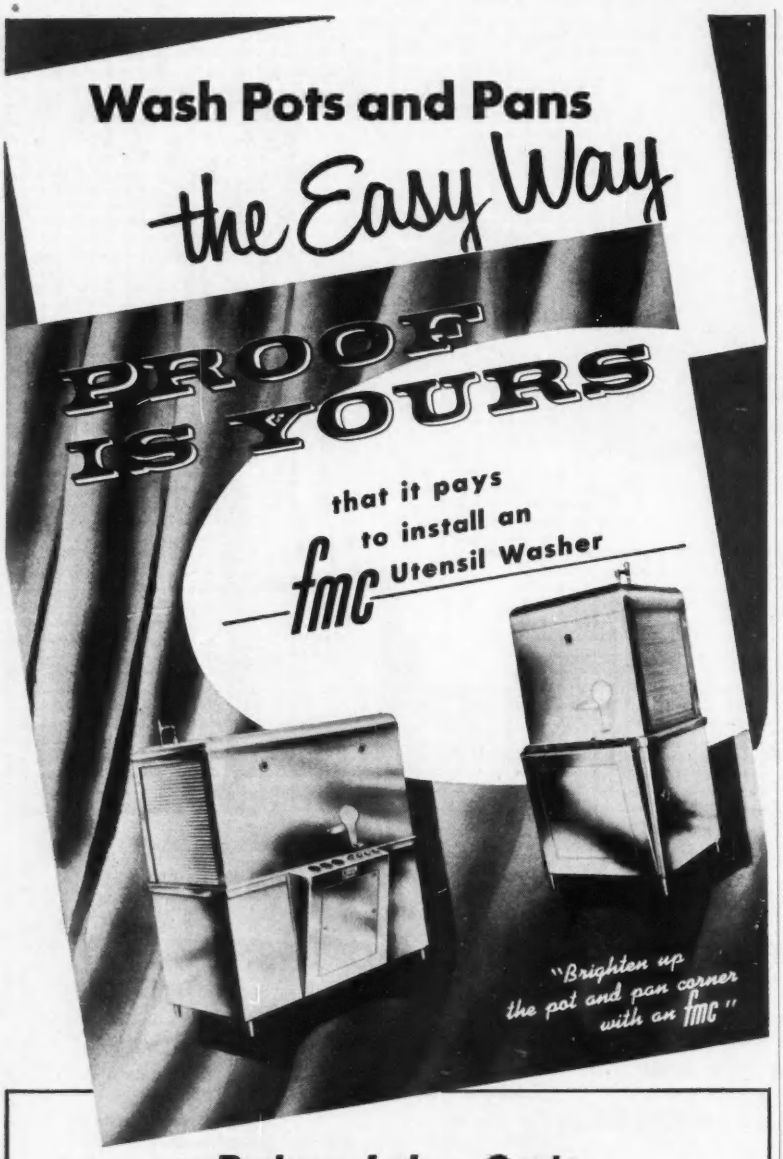

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version of the food model exhibit featuring the low-calorie diet with sodium-restricted and fat-restricted adaptations.

From New York, A.D.A. moves back to the Midwest and the presentation of a weight-reduction exhibit to members of the *American Home Economics Association* in St. Louis, June 25 through 28.

From this schedule, it may be inferred that A.D.A. national exhibits for spring 1957 are certainly on the move—could we say, "Going places and doing things"?

A.D.A. Representative. Dorothea F. Turner, A.D.A. liaison representative, attended the meeting of the Food and Nutrition Board of the National Research Council on April 5 and 6 in Washington, D. C.

Civil Defense. The Federal Civil Defense Administration is conducting regional advisory committee meetings. Major Katharine E. Manchester attended the first conference held in New Orleans, March 28 and 29. Jane Pirkey attended Region Seven Women's Conference on April 15.

The following A.D.A. members have accepted appointments to serve on the Association's Civil Defense Committee under the chairman, Dorothy Bovee: Marian C. Jones, Mary Ford, Major Katharine E. Manchester, and Elsie W. Russell.

Additional Appointment. LeVelle Wood has been appointed as the fourth A.D.A. representative on the Joint School Lunch Committee of The American Home Economics Association, American School Food Service Association, and A.D.A.

Obituaries

Marjorie M. Reinhardt. The A.D.A. office has received word of the death of Marjorie M. Reinhardt, Director of Food Service and Nutrition for Hartford, Connecticut schools since 1949. Before going to Hartford, she taught home economics in Minnesota high schools, served as a hospital dietetian, and for five years was manager of dining halls and instructor of institutional management at the University of Delaware. She had been a member of the Association since 1933.

Joan E. A. Graham. Notification has been received by A.D.A. of the death of Joan Elizabeth Atcheson Graham of McCamey, Texas. She had previously been employed in the Dietetic Service, Kennedy Veterans Hospital, Memphis. Her membership in A.D.A. dated back to 1951.

News of Products and Services

The National Restaurant Association, The Tea Council of U.S.A., Inc., and

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Conveniently supplies essential nutrients for 24 hours!

To prepare, mix 1 quart whole milk, 3 cups (405 Gm.) non-fat milk powder, 4 heaping tablespoons (60 Gm.) GEVRAL PROTEIN.

Add water to make 2,000 cc.

This formula supplies:

Liquid	2,000 cc.
Protein	217 Gm.
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Carbohydrate	273 Gm.
Calories	2,354

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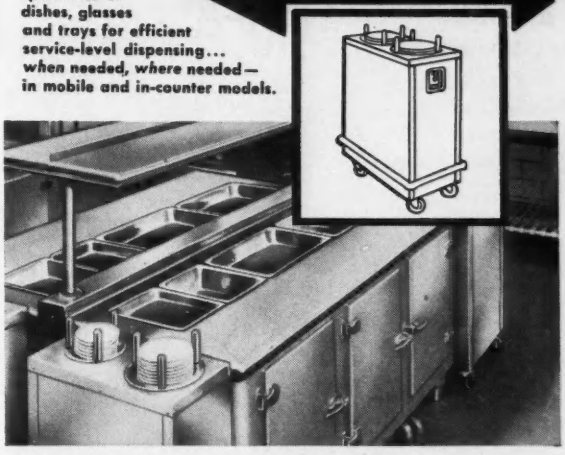
AMF LOWERATOR* Dispensers
—the planned, clean dish-handling system

Planned quantities of dishes, glasses and trays for efficient service-level dispensing... *when needed, where needed*— in mobile and in-counter models.



In many mass-feeding operations, mobile AMF Lowerator Dispensers are wheeled *where* they are wanted, *when* they are wanted. Planned quantities of dishes are loaded directly into units at the dishwasher and easily rolled to service points. Unnecessary re-handling and extra service labor are eliminated. Handling and breakage are minimized; smaller dish inventories can be more efficiently used.

Automatic, service-level dispensing and perfect positioning are combined in the AMF Lowerator Dispenser System. Designed in sizes and capacities to meet all requirements; available in mobile or in-counter, heated, unheated or refrigerated models. Mobile models make it easy to expand, since facilities are enlarged *without* costly remodeling.

Your Food Service Equipment Dealer will assist you in planning the AMF Lowerator Dispenser System best suited to your needs. See him or write for catalog illustrating the complete line of AMF Lowerator Dispensers.

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LOWERATOR
SELF-LEVELING DISPENSERS

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CELLU Fish
CELLU Chicken
CELLU Milk
CELLU Peanut Butter
CELLU Relishes
CELLU Jelly
CELLU Salad Dressing
CELLU Bread
CELLU Flours
CELLU Wafers
CELLU Cookies
CELLU Baking Powder
CELLU K-Salt
CELLU Sugarless Sweetener
CELLU Gelatin Desserts
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CELLU Low Sodium Milk

New for your patients on low sodium diets! Tastes like skimmed milk when reconstituted! It's specially processed with reduced sodium content, intended for the production of low-sodium foods. . .reduces the sodium content as much as 95% (30 mgs. in 100 grams). Reliquefies readily. . .economical to use as an ingredient in palatable beverages soups, custards, etc. 12 oz. jar makes one gallon. SEND FOR YOUR FREE SAMPLE and complete catalog of CELLU Low Sodium Foods.

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DINE WELL WITH CELLU FOODS!

NOW--in 2 SIZES

2½ SIZE CAN for small institutions & large institutions with specialized requirements

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BOMBAY *California Valencia*
ORANGE AND GRAPEFRUIT BASES
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Now every institution can enjoy the tremendous budgetary-advantages of using Bombay. The new 2½ Size reconstitutes to 4 Quarts and 12 fl. ounces. The No. 10 can makes 4 gals. Same delightful taste-appeal. Same fixed standard of nutrition. If you haven't tasted Bombay, write for samples today . . . without obligation!

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the *Food Machinery and Chemical Corporation* have now placed in production the FMC TeaMaker, first shown to the public at the 1956 National Restaurant Show. The TeaMaker a stainless steel unit, 16 by 21 by 30⅛ in. is a thermostatically controlled electric hot water heater which maintains a constant supply of 200°F. water. With the 8-oz. infuser, 500 cups of hot tea or 400 glasses of iced tea can be served per hour. Holding time in reservoir can be from 2 to 3 hr. after last brew.

Koch Refrigerators, Inc. has introduced a new line of reach-in refrigerators called the "Series M." Special features of the new equipment are the adjustability of wire shelves and a "bonus shelf" arrangement which provides utilization of all shelves with adequate allowance for top-to-bottom refrigerated air circulation. Another feature is a "food file," which is a frame which can be loaded with trays. The entire file, frame and all, slides in and out of the lower doors of the refrigerator to or from a special cart for transportation. The Series M cabinets are available in 1-, 2-, 3-, or 4-section widths, front opening or pass through with solid or glass doors, for medium or frozen storage in 26 or 34 in. depths.

Robertshaw-Fulton Controls Company offers a bulletin describing an electric oven temperature control with an auxiliary top-heat switch for use on domestic cooking ranges. Featured are: model N45, a single-dial thermostat with positions for off, bake with auxiliary top-heat, and broil positions; and Model N46, which has cover-type mounting for shallow installations.

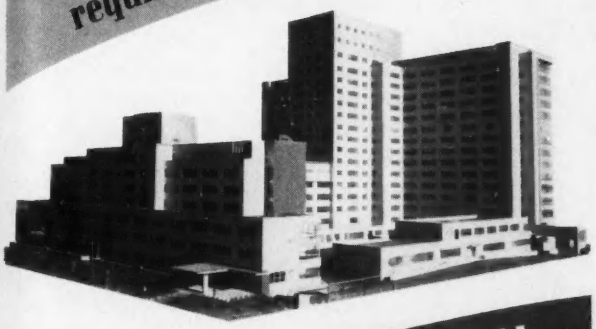
Other news from *Robertshaw-Fulton* includes an announcement of the promotion of Shirley Pemberton to Director of its Home Economics Department. Mrs. Pemberton is a graduate in home economics from the University of Minnesota.

A new model has been added to *Vischer Products Company's* line of Flex-Seal speed cookers, this one a counter model. With dimensions of only 12 by 12 by 24 in., it is complete with its own electric boiler, and, like the larger single-cavity model, will cook a complete meal for four in from 5 to 10 min.

As of January 1, 1957, the *Doughnut Corporation of America* has announced a change in its corporate name to *DCA Food Industries Inc.* In addition to the marketing of Downyflake mixes and bakery specialties to the institutional trade, DCA serves the baking industry; the frozen food processing and consumer field; the ice cream specialty field; and also operates a nationwide chain of Mayflower coffee shops and doughnut bakeries.

A complete paper place setting for schools, hospitals, inplant feeding operations, and restaurants has been announced by the *Lily-Tulip Cup Corporation*. This Lily dining service now includes all pieces from the soup to the dessert dish, and all pieces are "open stock." A sample kit is available as a guide in ordering. This kit contains an 8-oz. container, cold cups from 4 oz. to 10 oz.; ¾-oz. and 1-oz. cups; 4-oz. and 6-oz. pleated dishes; and portion cups

MODERN hospitals require MODERN refrigerators



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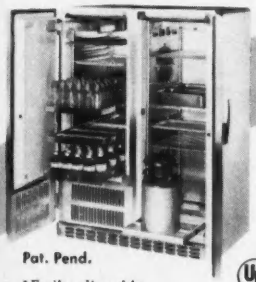

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These truly modern refrigerators have been especially designed to meet every hospital need in food service, laboratory or general service. Patented, exclusive accessories make possible many adjustable interior combinations for and including biologicals, blood and eye banks, nursery refrigerators, dough retarders and salad-dessert refrigerators. There is a model for every need, a size for every use and a price for every budget. We welcome your careful comparison.

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Dish turnover is faster . . serve more people with less equipment. Breakage is minimized.

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Olson mechanized dish handling systems have paid for themselves many times over in the savings they have made in time, labor, equipment and space. Olson installations in hospitals, restaurants, hotels and food service establishments of every type are the best advertisement we can write for Olson equipment. See for yourself what modern mechanized dish handling has done for others. Write for the location of the nearest Olson installation to you.

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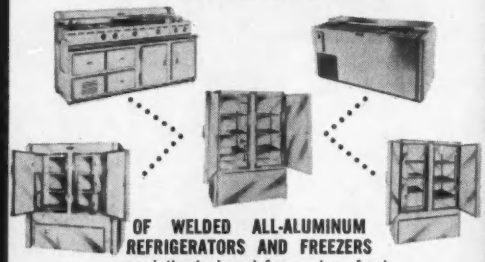

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CRAMORES CRYSTALS
are ideal for institutional use, providing consistent year-round top quality real fruit flavor—at half the price.

★ *Easy to use and store—no spoilage—no squeezing*
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made from a base of pure, dehydrated citrus fruit juices with fruit components added to enhance flavor and body—are available in lemon-lime and orange.

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This attractive booklet is a guide to better food and food service in the small institution.

Based on normal nutritional requirements for adults, the menu patterns, sample suppers, and pointers on meal planning have their place in any household. Practical ideas for making the work of the manager easier and pleasanter include a weekly marketing guide, hints for economy in buying and storage, and suggestions for serving.

This is a project of the Diet Therapy Section of The American Dietetic Association.

Single copy 50¢

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from ½ oz. to 5½ oz. Also included in the kit are 6- and 8-oz. hot cups with handles and 7-oz. hot cups without handles, plus China-Cote hot drink cup in the 8-oz. size. Plastic-coated and uncoated plates are included in a variety of sizes; 6, 7, 8, 9, and 9⅝ in. Lids are also included for the 8-oz. hot food container, the 6- and 8-oz. hot cups, and the ¾-oz. and 1-oz. creamers. A place mat is added.

Lily-Tulip has also announced that it will manufacture molded pulp products, such as smooth surface compartment plates, at its newly organized and wholly-owned subsidiary, Old Town Pulp Products, Inc., Old Town, Maine. With the molded pulp products as supplements to the Lily current line of paper cups and containers, ultimate plans are to produce molded products at Lily plants in other sections of the country.

"Recipes from Checkerboard Square," is the title of a new booklet of ideas and small-quantity recipes published by the *Ralston Purina Company*. Included in it are recipes for each of the following: breakfast dishes, breads, cakes, cookies, desserts, main dishes, snacks, and other treats.

Southern Equipment Company has published a new booklet called "Finest Food Serving Equipment for Schools, Colleges, and Universities." More than one hundred photographs and floor plans of elementary schools, junior and senior high schools, colleges and universities are presented together with descriptive information pointing out the newest advancements in food serving equipment for schools.

W. H. Frick, Inc. has published a brochure on "Dispensator Equipment—and a New Method of Food Service Operation." This brochure includes pictures of wheeled equipment for handling clean and soiled dishes; glasses and cups in wire racks; bussing soiled dishes; serving salads and desserts; and a dishwashing room layout.

Eleanor M. Crozier has been appointed to the newly-created post of Manager of Consumer Information, Home Economics Division, *National Biscuit Company*. For the past two years, Miss Crozier has been Director of Home Economics for Minute Maid Corporation. Prior to that she had been associated with United Fruit Company, *Good Housekeeping* Magazine, and Hoffman-La Roche, Inc. She is a member of The American Dietetic Association and other professional organizations.

Quaker Oats Company is entering the institutional market this month with a line of products packed under a special institutional label—the big "Q" with the word "Quaker" running through the center. The first products offered to the institutional trade will include 5-lb. packages of: five Aunt Jemima products—Deluxe Pancake Mix, Deluxe Waffle Mix, Corn Bread Mix, Muffin Mix, and Gingerbread Mix; Quaker Oatmeal Cookie Mix; Quaker Enriched Farina; Quaker Whole Wheat Cereal; Scotch Brand Steel Cut Oatmeal; and Quick All-Purpose Barley. A 4-lb. package of Pettijohns Rolled Whole Wheat will also be available.